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An Address

ON

THE OCCASION OF THE DEDICATION OF THE OSLER LIBRARY

By W. S. Thayer, M.D., LL.D.,

Baltimore, Md., U.S.A.

EARTH, also, has its immortalities; the immortality of inheritance; the immortality of repute; and that other, surer, immortality which lies in the transmission through generations of the beneficent influence of a noble life The memory of the man may perish; his influence can never die. The message that was his is carried on through the years, hidden though it may be from the consciousness of mankind; mute but quickening.

Yet the familiar and profound truth that in this life it is deeds and not words that count seems, sometimes, a paradox. For 'tis so easy, to-day, by voice or image or written character to impress one's name on the public conscience, that to the myopic masses, the word seems all powerful. To the initiated, however, the true significance of a man's words, as they are uttered, is clear only when one may look in his eyes. Even in life the word, "unless the deed go with it," is ephemeral. Empty words are soon forgotten. After death 'tis strange how quickly the word and the speaker pass out of memory. Sterile seeds perish in the womb of time.

The unwritten message of man endures only when it is a message and not a mere sound. Books are men's messengers. They alone preserve, through a precarious existence, the name of the many; and it is not unhappy that the life of the arid pulp of the average product of the modern literary flux is as brief as is the message it bears exiguous. But words instinct and vital with the spirit of one who dreamed lofty dreams, whose life measured up to his ideals and his dreams—such words live, and through them breathes the essence of him from whom they sprung. They not only live; they grow. Happy the book pregnant with such words! The full message of a man's life, while yet he lives, is often as a seed sown in the earth, hidden from the eyes of the world, apparent only in the blossom of its resurrection.

Osler has been dead nearly ten years. He is just as much alive to us who were his students and his fellows as he ever was. His figure looms larger. His message is clearer, far more familiar and far better understood by the world than it was in his lifetime, for it is the message of a truly great character. I venture to say that this has surprised some of his friends and students. They loved him; they admired his skill; they respected his learning; they looked up to his simplicity, his industry, his charity, his tolerance, his temperance, his equanimity, his devotion to his vocation and to his literary avocations, to his knowledge of books and history, to his reverence for the past and his confidence in the future; they depended on his advice, rarely proffered, always ready when sought; they relied on his sincerity and candour and loyalty, for as he had never spoken ill of others, so could he never speak ill of them; they delighted in his alert eye, his sparkling wit, his nimble tongue; they marvelled at and envied his power of self-protection and his control of his own time. They thought of him as an ever-present, unfailing friend with whom everyone was at home, no one ill at ease; he was a part of their lives, "The Chief", Sir William Osler. When he died they

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felt a great emptiness; they found that 'twas difficult to conceive of life without him. They discovered that he who seemed so simple, so like anyone else, so natural—was unlike anyone else; there was no one else like him. There were others as skilful, others as clever, others as learned, others as witty, others as kindly, others as honest, others, but very few, as simple, others as candid, others as wise; there was no one attribute which, on analysis, seemed wholly unique—but he was different. Certainly his was an unusual combination of qualities and powers, a combination of remarkable perfection and rare charm.

Not all his associates, I am sure, realized all this until he had gone. Man, with his imperfect vision, rarely recognizes pure wisdom when it is at his side. And yet Pallas Athene still lives, hidden in the homely bodies of men, to reveal herself only in the flower of their memories.

> "So springs and strives through the soil that the legions of darkness have trod,
> From the root which is man, from the soul in the body, the flower which is God."

Thirty years ago Osler said to the students of McGill:

> While medicine is to be your vocation, or calling, see to it that you have also an avocation—some intellectual pastime which may serve to keep you in touch with the world of art, of science, or of letters. Begin at once the cultivation of some interest other than the purely professional. . . . No matter what it is—but have an outside hobby. For the hard-working medical student it is perhaps easiest to keep up an interest in literature.

Literature was his avocation. Profoundly human, tenderly humane, he had an innate understanding of his fellows, a keen interest in their hidden virtues, an infinite charity for their failings. Through the book he looked ever for the man. The little notes on fly leaf or cover in fine, careful, handwriting are full of reference, almost loving, to the life and habits and history of the author. This human interest might indeed be called the keynote of his life. See how it stands out on every page of the story of his career so vividly set before us by the reverent and masterly hand of Cushing! For eight years, during his Baltimore days, class after class of students at the Saturday evening conferences about his dining table watched the growth of his library. And as the new treasures, "presents from Mrs. Osler" as he used to call them, were shown to them and to us, his assistants, it was generally with stimulating references to the life and character of the author.

Osler's love of his fellow man was shown daily in his never-failing consideration for patient, student, and assistant, and in his reverence for his older colleagues and teachers and for the great figures of the past, a reverence charmingly manifested in his biographical essays such as those collected in *An Alabama Student*.

To his vocation he gave his life. His devotion to his calling never lessened, but, in his Oxford years, he rejoiced in the richly earned privilege of a larger liberty to give himself to his literary avocations, and to enjoy the companionship of scholars. There, books which are not wholly devoid of will, sought him, gathered about him, and took new life from him, life which they still suck from his ashes. And when he ceased to walk with men, they found in her in whose heart his spirit endured, a nurse, a guardian, and a comforter.

A striking attribute of human greatness is the sureness with which the master, in the execution of a lofty design, attracts his appropriate complement. The generous project of his great and growing catalogue begun, the guiding spirit gone, the necessary complement was inevitably at hand. In nearly nine years of meticulous labour, his cousin Francis, the devoted and worthy upholder of a noble tradition, has made this work not only the faithful catalogue of a great collection and a loving memorial of its illustrious founder; he has erected a bibliographical monument of unusual perfection and completeness, such as would have warmed the heart of him who was its *fons et origo*. A pious task piously accomplished!

That these books and his ashes should come back to Montreal is entirely fitting. Osler could not have willed it otherwise. It was the natural gesture of loyalty and love. His instinctive, unfailing, loyalty was one of the most beautiful of his qualities. Osler loved his fellow man. He was a man and nothing human was foreign to him. He hated narrow Chauvinism in life and in medicine. In all his teachings he referred his students to the man who had led the way. The symptom or the disease became to them associated with the man, not through the vain repetition of a name but through the story of the life of a great student or an intrepid searcher for truth, or a keen observer, and his character and

his qualities and his contributions, and the incidents which led to this particular contribution. In like manner, in current medicine he taught his pupils and associates never to allow the work of a foreign colleague to escape their notice. In the Johns Hopkins Hospital he started, early, a "Journal Club," for the special purpose of keeping abreast of foreign publications. He never failed to give credit to the work of others. He taught us to seek and meet and correspond with students of other lands. He urged us to travel and often put the means in our way, contributing generously from his own resources. He was completely free from local or national jealousy or prejudice. Wherever there lived, or had lived, men of great heart and fertile mind there Osler was at home.

He loved to call himself a peripatatic. Twenty of his most active years he spent with us in the United States, where we felt that he was our own. There, as everywhere, he treasured and remembered his associates and his associations, and beyond the sacred memories in the hearts of men, we have, in the medical clinic at the Johns Hopkins University a precious monument of his genius, and in the Tudor and Stuart Club a fragrant memorial of a fleeting figure of beauty and promise. But deep in his heart there was a love for and a loyalty to the land of his birth and the institution which had nourished his early efforts, that institution to which he had devoted his first years as a teacher; and beyond it all there was that deep, reverent, ineradicable love for the Old Home which is a vital part of more of us of common British ancestry than realize it or confess it. I fancied always that he would end his days in England. The Old Country was, after all, the home of his spirit. That the love of the land of his birth and the nursery of his expanding mind should call back his ashes and the most precious of his earthly accumulations was a beautiful and natural manifestation of that perfect loyalty in which he could not have failed.

In the wide world of to-day in which we wander afar, we have many homes; the home of our birth; the homes of our activities; the home of our spirit. And we have many loyalties. But strong as the ties may be which bind us to the homes of our activities, deep as our loyalty may be to the beloved home of our spirit, it is to the home of our birth that the true loyalty generally leads us in the end.

It is not only his ashes that have come home. As I speak I hear the voice of the books. For books can speak. Listen to their voice:

"Men, men, grandchildren of them whose word we bear, you who have built this shrine:—Hearken to the word of the book: Shaped by the hands of mortal men who vanished from the light of day in the hour of our infancy, we are the bearers of their spirit through the centuries. On us depends their human immortality, that immortality which is recognized by men. But another message we bear, a message beyond that which is written, a message borne in our own substance, in our characters, in our garb, a message which tells of times and men and customs and history, an unwritten message expressed in language which is our own, our message.

"Though our history be short, our life is long compared to the life of men. But though we be the guardians of his mundane immortality, the life of the book which depends upon the children of men is uncertain, full of vicissitudes, and beset with danger and care. For man, whose message we bear, is short-lived and fickle, restless and forgetful, intolerant and cruel.

"Born of man, we have perished too often in flames kindled by the hands of the brothers and children of them whose creatures and servants we were, who have sought in fanatical hatred, to destroy in us the seeds of that human immortality which we guard. Until but yesterday we spread man's message in words which every scholar understood, in the language of scholars. But, almost in a day, the children of men, absorbed in wordly things, have forgotten the speech which was once a common bond, and heedless and un-understanding, have consigned us too often to the cruellest of fates, oblivion, where on dusty and forgotten shelves, pierced and consumed by the silent and relentless *Anobium hirtum*, we have wasted in slow and fatal marasmus.

" 'Tis true that some among us have found refuge and tender care and regal garb, but all too commonly we have been carried far from home to pass our lives in exile among those who, blind to the written message and deaf to the voice within us, respect but our years. Like

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princes in their jewelled robes, in all our ease and splendour, we are lonely.

"But in all times there have been those rare spirits who see and read and feel our message, who hear our voice, who love us for what we bear and for what we are; who find in us food for new and higher dreams and aspirations; whose loving and understanding hand adds fresh and fecund thoughts to our pages; thoughts that emblazon and consecrate the past and illumine the future.

"For there are some men whose touch is as the touch of an enchanter, a touch which reveals and transmits the love of men and the understanding of men, the love of books and the understanding of books, reverence for men and reverence for books; in whose very ashes lives a spirit which to us is life and peace and home.

"Such an one was he whose ashes we guard. It is such as he that assure us that our labour has not been in vain. In such men is our renascence.

"We hold his ashes in our embrace. His ashes are our heart. Men say that ashes are dead. The ashes of a great spirit never die! They are as the grateful soil that receives the seed in the fall. They are as the snow that protects it and keeps it warm in winter. They are as the showers in the spring, and the sun in summer. In them lies the promise to the spirit of man of an ever-recurring harvest.

"His ashes are our heart. So long as they are our heart, so long shall our message live and work in the hearts of men. So long shall we live. Think not that these ashes are dead. The ashes of a great spirit are immortal!"

So speak these books. And so to-day we dedicate this shrine where they shall live, nourished by his ashes, and deliver to us and to our children their message and his.

An Address

ON

INTRINSIC CANCER OF THE LARYNX; THE LASTING CURE IN 76 PER CENT OF CASES BY LARYNGO-FISSURE*

BY SIR STCLAIR THOMSON, M.D., F.R.C.P. (LOND.), F.R.C.S. (ENG.),

London, Eng.

CANCER is at first a local and limited disease. It should therefore be curable by local and fairly limited operations. To secure this there are two important requisites; the first is that a correct diagnosis be made while the disease is in an early stage, and the second is that it occurs in a region where it can be excised without great risk to life and without severe mutilation.

These two provisos are fully met with in one group of laryngeal cancer, while they are sadly wanting in another. For, as you well know, it is fifty years since Krishaber of Paris drew attention to the great clinical difference between extrinsic and intrinsic cancer of the larynx. The difference between these two groups is very striking. In the extrinsic group the symptoms are insidious and not well marked; diffusion is rapid; the lymphatics are early invaded; and operative treatment can only hold out hope of lasting cure in a few cases. Indeed, Mackenty goes so far as to say that "all extrinsic cancer of the larynx cannot and never will be curable by surgery." Extrinsic cancer affects the outer surface of the larynx, or the borders of the aditus ad laryngem, *i.e.*, the epiglottis, the ary-epiglottic folds, the arytenoids, the retro-cricoid region, and the posterior surface of the larynx (*i.e.*, the sinus pyriformis). I need not refer further to this group of laryngeal cancer. It does not concern us to-day.

Let us turn to the intrinsic manifestation which chiefly attacks the vocal cords, and, particularly, the anterior part of them. Here the one definite symptom—for many months the solitary indication—is hoarseness. It is

* Address delivered in Montreal before the Canadian Medical Association, June 19, 1929.

slight at first, and so may be insidious, but it is persistent and increasing. It causes no cough, no dysphagia, not even discomfort; appetite, health, vigour, weight and bien être are all unaffected, and there are none of the symptoms which a previous generation waited for before diagnosing cancer of the larynx, *viz.*, pain, cough, blood-stained sputum, fœtid breath, enlarged glands, wasting and cachexia. By the time these conditions have developed the case is hopeless.

How is an early diagnosis to be made? By first realizing that any huskiness or hoarseness persisting for longer than the customary three weeks of an ordinary catarrhal laryngitis requires the skilled inspection of the larynx by an expert. In early life such an examination may reveal the first indication of tuberculosis. In later years it can detect an epithelioma which can be safely removed with lasting cure and the preservation of a useful voice.

Fortunately, the intrinsic form of cancer in the larynx is much more common than the extrinsic, at least in males. It is not known in females, although with them the extrinsic form is much more common. Cancer, as we know, is more frequently met with in males in the tongue and pharynx. As we descend the œsophagus the frequency of cancer goes diminuendo with the females, while with the males it goes crescendo. [Sir StClair Thomson here demonstrated various stages in laryngeal cancer by means of lantern slides.—ED.]

The brilliant results of operation by the laryngo-fissure route are chiefly due to the pioneer work of two British laryngologists at the end of the last century—Butlin and Semon.

I have now the honour of submitting to you the results I have obtained in 70 consecutive cases. Every case in this series has been made public.

Laryngo-fissure is not simply, as has been suggested, "splitting open the larynx and clipping out a cord." Such an inadequate and unsurgical procedure for a disease like cancer could hardly hope for satisfactory results. As you will see from this diagram the technique is that of a partial laryngectomy, almost a complete hemilaryngectomy, but performed from the inside. After the larynx is split open lengthwise, one thyroid ala is removed and all the soft tissue internal to it, from its internal perichondrium to the mucous membrane of the glottis, from the ventricular band above to the subglottic space, and from the anterior commissure back to and embracing the vocal process of the arytenoid cartilage. This is all removed in one mass.

CLINICAL MATERIAL

I have operated, through a laryngo-fissure, on 70 cases of intrinsic cancer of the larynx.

TABLE I.—CASES OPERATED UPON BY LARYNGO-FISSURE (1900-1928).

	No. of Cases	Private Cases	Hospital Cases	Age Limits
Male	63	56	7	40-80
Female	7	4	3	35-58
Total	70	60	10	

Proportion of Male and Female Cases

Looking at Table I we notice the large preponderance of males and of cases in private practice. Hospital patients are only less numerous for the simple reason that the ignorant and uneducated do not present themselves early for what they regard as a trifling huskiness, or, if they do, will not accept advice until the lesion has so far advanced that complete laryngectomy is the only possibility.

Age Distribution

In the next table (II) we note the incidence of my 70 cases according to sex and decade.

TABLE II.—INCIDENCE, ACCORDING TO AGE AND SEX, OF 70 CASES OF INTRINSIC CANCER OF THE LARYNX

Ages:	21-30	31-40	41-50	51-60	61-00	Over 70	Over 80
Male	0	2	14	28	13	5	1
Female	0	3	2	2	0	0	0
Total (both sexes)	0	5	16	30	13	5	1

Here it is noticed that cancer of the larynx is not unknown between 30 and 40 years of age (of course, cases at much earlier ages have been recorded); that, in men, it may occur in advanced life; and that it appears to be most frequent with them in the sixth decade of life. With regard to the females in my list (7) the numbers are, perhaps, too small to justify many conclusions; but it is at least noteworthy that, with them, cancer would appear to be met with earlier in life and to be rarer after 60. All these women were non-smokers and abstainers.

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RESULTS

Alive and Free from Disease

My results are displayed in the following tables. The first shows that, of 34 patients alive to-day, 32 have survived for periods varying from the date of operation.

TABLE III.—THIRTY-FOUR CASES OF INTRINSIC CANCER OF THE LARYNX ALIVE AND WELL, WITHOUT RECURRENCE, AFTER LARYNGO-FISSURE

Case No.	Age at Operation	Sex	Present Age	Period since Laryngo-fissure	Case No.	Age at Operation	Sex	Present Age	Period since Laryngo-fissure
6	59	M	78	19 years	45	35	F	43	8½ years
11	48¾	M	64¾	16 "	47	60	M	68	8 "
18	65	M	79	14½ "	50	53	M	60	7 "
21	66½	M	81	13½ "	52	40	M	47	7 "
22	59	M	73	13¼ years; 12 since gland operation	53	58	M	65	7 "
26	46	F	58½	12½ years since first cord; 5½ since second cord	54	58	M	65	7 "
27	57½	M	70	12½ years	55	47	M	56	7 "
29	47½	M	60	12½ "	56	80	M	86½	6½ "
31	50	M	62	12 "	58	79	M	85	6 "
32	53	M	65	12 "	60	52	M	58	6 "
33	67	M	79	12 "	61	49¾	F	56	5 2-3 "
36	60	M	70	10	62	58	M	62	4¼ "
38	40	F	51	10 "	63	56	M	60½	4¼ "
41	33	F	42½	9½ years since laryngo-fissure; 8¾ years since partial laryngectomy	64	74	M	78	4¼ "
42	48	M	56½	8 1-3 years	65	54	M	58	4 "
44	58	M	67	9¼ years	66	62	M	66	4 "
					69	56	M	56	1½ "
					70	62	M	62	1½ "

Healthy, Useful, and Prolonged After-History

Attention might be directed to the advanced age of many of the survivors, to their health and vigour, and to the social well-being secured by having conserved a useful voice. No. 11 is a Canadian, sent to me sixteen years ago by Dr. Birkett. No. 18 is an active shipbuilder in Scotland. No. 21, in his eightieth year, writes that he still cycles. No. 31 is an admiral; he is devoted to social work and can address meetings in the open air. Four are physicians in active practice (Nos. 52, 59, 63, and 66).* Two are lawyers who conduct large affairs (Nos. 47 and 55). A clergyman is able to preach twice on Sunday (No. 44). A schoolmaster retains his post (No. 50). A gentleman, aged 67 when operated on, is now 79 (No. 33). Four years ago he passed safely through the operation for enlarged prostate. This year he celebrated his golden wedding and made a speech which was audible at a dinner he gave to 120 of his employees. No. 56 is a retired judge who follows the hounds on horseback, six years after his operation and in his eighty-sixth year.

* Shown before the Royal Society of Medicine, November 4, 1927. See *Proc. Roy. Soc. Med.*, December 1927, Laryng. Sec., p. 1.

Deaths from Other Causes

Of the 73 patients 18 have died from other causes, without recurrence (Table IV). Of these, it will be noticed that 13 had lived a minimum period of three years without any recurrence, while 3 of them died ten or more years after operation. (The two "operative deaths" will be considered later).

TABLE IV.—EIGHTEEN DEATHS FROM OTHER CAUSES, WITHOUT RECURRENCE

Case No.	Age at Operation	Age at Death	Period after Operation	Cause of Death when Ascertainable
2	49	50½	1½ years	Laryngitis
3	48	58	10 "	Tubercle
5	54	61	7 "	Unknown (hospital patient, inspected 2 years before death and found sound).
8	58	61½	3½ "	Aneurysm
9	68	74	6 "	Bronchitis
10	55	60-? 63	5-? 8 "	Pneumonia (an Indian subject)
12	53 (F.)	67½	14½ "	Influenza
17	69	75	5¾ "	Cerebral hæmorrhage
23	68	76½	8½ "	Urinary toxæmia
25	72	84	12 "	Heart failure
28	48	49	11 months	Developed pleuro-pneumonia with fetid empyema 1 month later. Operation: good recovery.*
30	63	65	1 2-3 years	Angina pectoris
34	75	85½	10½ years	Heart failure
35	58½ (F.)	62	3 2-3 "	Cerebral hæmorrhage
36A	70	74	4 "	Unknown
37	69¼	78	9 "	Heart failure; arterio-sclerosis
40	56	56	50 hours	Operative (hæmorrhage, morphine, pneumonia)
51	42	42	4 days	Operative (rupture of œsophagus)

* No details obtainable, but Logan Turner found no signs of recurrence two months before death.

DEATHS FROM MALIGNANT DISEASE ELSEWHERE, WITHOUT RECURRENCE

If time permitted it would be interesting to study in detail the seven cases in the next table —that of death from carcinoma elsewhere, without local return of the disease (Table V). In two of them (Nos. 15 and 57) the virulence of the cancer must have been very intense, for glands in the neck were invaded within four and six months, and the patients were dead

within seven and eleven months, although the larynx in each case was free from recurrence.

TABLE V.—SEVEN DEATHS FROM LATER DEVELOPMENT OF MALIGNANT DISEASE ELSEWHERE, THE LARYNX REMAINING FREE

Case No.	Age at Operation	Time of Onset after Operation	Age at Death	Time Elapsed since Operation till Death
1	47	Malignant disease at base of tongue opposite side, started 1½ years after.	50	3 years.
7	43	Larynx filled up 3 to 7 months after operation. Laryngectomy after 9 months, but no cancer growth found in excised larynx (?syphilis). Diffuse malignant disease in glands of neck 7 years later.	51	7½ years
13	58	Death from malignant disease in abdomen, found at operation too extensive for removal.	69	11 years.
15	52	Infiltration of glands of neck within 4 months.	52½	7 months.
39	64	Glands in neck.	68½	4¼ years.
43	54	Mediastinal glands (x-ray findings).	57	3 years.
57	39	Glands in neck within 6 months.	39½	11 months.

In contrast to these cases are Nos. 39 and 7, in which the glands did not develop until four and seven years after operation.

Deaths from Local Recurrences

We now come to the local recurrences. There were only 11, all males. It will be noticed in Table VI that in 8 of these the recurrence took place within the first year. This supports Semon's dictum that a recurrence generally takes place within the first twelve months. Personally, I feel little anxiety if the third month passes without any suspicious symptoms.

TABLE VI.—ELEVEN DEATHS FROM LOCAL RECURRENCE

Case No.	Onset after Fissure	Period till Death after Fissure
4	8 months.	20 months and 12 months after total laryngectomy.
11A	?4 to 6 months.	?9 months.
14	3 years.	3 years (second laryngo-fissure; death from idiosyncrasy to heroin).
16	2 months.	5 months.
19	3 years.	4½ years.
20	3 months.	1 year.
24	1 month suspicion, and certain in 4 months; tracheotomy at end of 5 months.	15 months.
46	2 months (declined laryngectomy).	11 months.
48	3¼ years.	4¾ years.
49	2 months.	7 months.
67	2 months.	4 months.

These early relapses should not be regarded as a "recurrence of disease." We are more likely to advance the subject if we frankly regard them rather as "incomplete removals," and then investigate why the operation was a failure, or why the case was unsuitable for this type of operation.

Operative Deaths

Of the 74 laryngo-fissures performed on 70 patients (2 of the 70 having been operated on for a local recurrence and 2 requiring a supplementary laryngo-fissure) 2 have died within forty-eight hours of the operation, one from idiosyncrasy to heroin, and the other from having been given a larger dose of morphine than had been intended, although, even then, ¾ grain would not under the circumstances be regarded as a large dose. I think death would have been avoided in both cases if no soporific had been given. I now refuse to give an opiate of any kind before or after operation, and I forbid all "dopes" before anæsthesia (mixed, local and general). A third case, No. 51, died on the fourth day from rupture of the œsophagus due to post-anæsthetic vomiting, a very rare accident, not connected directly with the operation. Accepting these 3 cases as operative deaths, this would give a death rate of 4 per cent—a very different figure from that recorded by the pioneers of this subject, and from that still existing in the few statistics which are rarely published.*

If permitted to delete No. 51 (rupture of the œsophagus) I have had no operative death since case No. 40. This sequence of thirty cases without a disaster encourages me to give it as my opinion that if a laryngo-fissure is carried out with the precautions and care I insist on in regard to hæmorrhage and the descent of blood into the bronchi, then it should be an operation free from any danger, except that incidental to all operations.

Lasting Cure

We need not revive barren discussions as to how long after operation a patient may be regarded as permanently cured of cancer.

With few exceptions, all patients are in middle or advanced life. To ensure a comfortable and a vocal existence for ten to twenty years to 12 men who have passed their forty-seventh to sixty-seventh year (as in the first 12 cases of Table III); to operate on men of 79 and 80 years of age (Nos. 58 and 56), and to

*"The results of indiscriminate operation have been so bad that their records are unobtainable because suppressed."—D. Bryson Delavan.

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show them healthy and vigorous five years afterwards; and to restore doctors, lawyers, clergymen, and schoolmasters to their calling, are surely sufficient evidence to claim this method as securing permanent cures.

Dr. Bryson Delavan, twenty-four years ago, said that "statistics based on alleged cures of less than three years' duration are worthless."

A scrutiny of the tables I have submitted will show that 63 patients are eligible on this basis, and that 48 of them were alive and well and free from recurrence at the end of three years. This lasting cure of 76 per cent has been obtained without restricting oneself to particularly promising cases. As the indications for laryngo-fissure have not yet been quite established—beyond that of being a suitable operation for many cases of intrinsic cancer—I thought it right to try it in various intralaryngeal manifestations of the disease. Although this may have impaired the statistical results, it has enabled me to form some clear conclusions as to the indications and limitations of the laryngo-fissure route for the eradication of intrinsic cancer of the larynx.

CONCLUSIONS

If intrinsic cancer of the larynx is diagnosed early it is best operated on by laryngo-fissure—an operation which should be free from danger to life and followed by an adequate voice and a lasting cure. The only necessities for this consummation are early diagnosis and meticulous care in operative precaution and procedure.* By educating the public to pay prompt regard to persistent hoarseness, and by teaching the profession to appreciate the niceties and necessities of early diagnosis, the number of laryngo-fissures and the proportion of lasting cures will steadily increase, while the need for laryngectomy will as progressively diminish.

In other regions of the body there may be better remedies than surgery can supply. In intrinsic cancer of the larynx other, simpler and surer, remedies no doubt will one day be discovered; but, at present, there is no better way than surgery and the laryngo-fissure route. By this we can secure results which have not been surpassed in the treatment of cancer in any other internal region of the body. I have tried to demonstrate this by referring to the active lives led by many of these patients, including voice-users, such as schoolmasters, clergymen, lawyers and doctors. I have also quoted statistics. There is a well-known saying that there are three kinds of lies,—lies, damned lies and statistics! But, again, there is another saying that statistics can prove anything,—even the truth! So I conclude with showing two photographs to strengthen my thesis. The first shows Case 31, an Admiral whom I met in France during the war and operated on in 1917. You see him making a political speech twelve years afterwards in a market square in Devonshire. I will not disturb the harmony of this gathering (or "throw the apple of discord into this meeting") by telling you whether he is a Conservative or a Liberal!

The last picture shows Case 56, the judge who hunts the fox, six years after his operation and in his eighty-sixth year. In sending me the photograph he wrote to explain that he did not know he was being snapped, as otherwise he would have looked at the camera. But he pointed out that his old mare evidently recognized the photographer and, being a lady, made an effort to smile, although only a horse smile!

* "Mistakes hardly short of criminal have occurred in laryngeal operations done by inexperienced men working with absolutely no trained helpers."—D. Bryson Delavan.

DOMESTIC LIVER EXTRACT FOR USE IN PERNICIOUS ANÆMIA.—The sufferer from pernicious anæmia, like the diabetic patient, must frankly face the necessity of continued attention to his treatments, probably for the rest of his life. William B. Castle and Morris A. Bowie, describe a process by which it is possible for any reasonably intelligent person to make from inexpensive beef liver an extract effective in the treatment of pernicious anæmia. The expense of the process, aside from the initial cost of the utensils needed, which are found in most kitchens, is practically the cost of the liver alone. With a little experience the time involved should not be greater than one-half hour daily. The extract so produced should not exceed in amount two ordinary drinking glasses (500 c.c.) of a liquid tasting very like beef broth, and almost entirely free from the peculiar flavour of liver which offends many patients. The process is based on the first few steps of the original procedure used by Cohn and his associates in the preparation of their extracts of liver effective in the treatment of pernicious anæmia. It can be carried out by the patient.—*J. Am. M. Ass.* **92:** 1830, June 1, 1929.

A REVIEW OF SOME OF THE ADVANCES IN ORTHOPÆDIC METHODS OF TREATMENT MADE POSSIBLE BY LISTERISM*

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IN no surgical department have methods of treatment undergone more revolutionary changes since the introduction of Listerism than in the field of orthopædic surgery. Having been identified with this specialty long enough to have been personal witness of many of these changes, it seemed natural on an occasion like this, when we are gathered for the purpose of commemorating the remarkable achievements of the great author of antiseptic and aseptic surgery, that I should attempt to review some of the improvements in orthopædic practice which in the absence of Lister's discovery never could have taken place.

Forty or fifty years ago orthopædic surgery was for the most part a crude art, based chiefly upon functional rest, manual manipulation, and the tedious and often painful corrective effect of cumbersome and unsightly mechanical appliances. The orthopædic practitioner of that time was an expert mechanic, but usually his knowledge of pathology was small, and his training in operative surgery still smaller. If he used the knife at all it was usually only to perform a subcutaneous tenotomy, to open an abscess, or some such minor surgical undertaking, although excisions and osteotomies were sometimes attempted by the more competent and adventurous ones. The contrast in the character of the papers published in the earlier volumes of the *Transactions of the American Orthopædic Association* with those appearing in the more recent numbers of the successor of these Transactions, the *Journal of Bone and Joint Surgery,* is interesting and instructive; and a similar change can be observed in the more recent text-books on this subject, as compared with those of earlier date. The most modern text-books on orthopædic surgery, *e.g.,* those by Jones and Lovett, and by Whitman, describe as a matter of course many operative procedures of such a major character as to require the highest surgical skill, the authors taking it for granted that he who essays to practice orthopædic surgery must not only be a trained surgeon but an absolute master of aseptic technique. Indeed, it may truly be claimed that in few departments of surgery is the most scrupulous asepsis so essential, for two reasons: first, because the nature of most orthopædic operations is such that infection spells not merely failure but often disaster; and second, because such a large proportion of orthopædic operations belong to the category of elective rather than imperative surgery; and, of course, purely elective operations add immensely to the surgeon's responsibility.

Not only would it be undesirable, but obviously impossible, in the brief time at my disposal, to attempt to enumerate or describe even a large proportion of the advances in orthopædic treatment which have become possible through Listerism, and my effort will be limited to a short review of a few of the more important advances in orthopædic practice which have marked recent years.

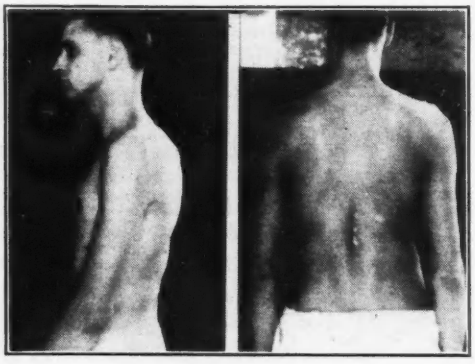
TUBERCULOSIS OF THE BONES AND JOINTS

In no part of the orthopædic field has a more striking evolution occurred than in the treatment of tuberculosis of bones and joints. Rest in bed, often for years, followed by more years of protection by means of jackets or braces of various design was for many decades the routine treatment of Pott's disease of the spine. But the direct splinting of the spine by some form of bone grafting now often enables the surgeon to bring about in months better results than formerly were achieved in years. This statement is not intended to discredit entirely the older methods, for these can still be made more or less effective in a certain proportion of cases, when carried out with the thoroughness and patient attention to detail which characterized the practice of the orthopædic pioneers. Nevertheless, the saving of time,

* The Listerian Oration, delivered before the Manitoba Medical Association, April 8, 1929.

with its incidental economic advantages, and the greater certainty of permanency when effective bone-grafting has been carried out in properly selected cases, is hardly open to serious question. It is true that there is still considerable difference of opinion as to the relative merits of mechanical and operative methods in the management of spinal tuberculosis, many of the older group of orthopædic surgeons being inclined to conservatism. Even among the conservatively inclined, however, it is more and more generally admitted that operative treatment should be resorted to in adults, however doubtful it may be in the case of children. My own judgment, based upon observation and upon a fairly large experience, is that operation, either by the Albee or the Hibbs method, or by various modifications and combinations of the two, is applicable with advantage to the great majority of all cases of this disease even in children as young as four or five years. In the younger patients it may be wiser to afford some form of mechanical protection for a year or more afterwards; but the operation alone, if performed with sufficient thoroughness and followed by three months of recumbency in properly constructed plaster shells, will bring about arrest of the local disease in most cases in children as well as in adults. I have long been convinced that unsatisfactory results of operative treatment can usually be traced to want of thoroughness in performing the operation, to failure to include in the operation a sufficient number of vertebræ, or to neglect of details in the after-treatment.

The question has often been raised as to the effect of a bone-grafting or fusion operation on the future development of the immature spine of a child. Some slides which I will show you have some interest in that connection. They are of a young man, now twenty-two years of age, upon whom I did an Albee operation in February, 1914. He was then seven years of age and had been under capable conservative treatment for over four years. There was a marked kyphosis in the dorso-lumbar region. These x-ray pictures were taken in January, 1928. They show clearly the disease in the dorso-lumbar region and the bone graft can be distinctly seen. The length and bulk of the graft, after being in position fourteen years, shows unmistakably that it has become an intrinsic part of the spine and has grown concurrently. The photographs of this patient's back certainly do not suggest any distortion as a result of the grafting performed when he was a child, but on the contrary the kyphosis is barely noticeable. (See Figs. 1 and 2). This patient plays baseball and rugby.



FIGS. 1 and 2.

An almost more striking change of sentiment is making itself felt in the treatment of tuberculosis of the hip and knee. Dr. Russell A. Hibbs, Surgeon-in-Chief to the New York Orthopædic Dispensary and Hospital, an institution which was founded on conservative orthopædic surgery, and in which mechanical methods have been developed to the highest possible efficiency, has recently shown that only a small proportion of cases of tuberculosis of the spine, hip or knee, are really permanently cured by conservative treatment, even when carried out in an excellent general environment including the use of heliotherapy. His statistics are at once convincing and discouraging as regards conservative methods. He says: "Relapses occur, ten, fifteen and twenty years after the treatment has been discontinued and the cases have been classified as cures." He further states: "There can be no doubt that many cases have been classified as quiescent which were not so, and many classified as cured which were not cured. So many so-called quiescent cases have been found at operation to have very active disease, although living comparatively active lives, that thus far we have no trustworthy evidence of inactivity in this disease. Certainly the condition of the general health is no guide. We have observed case after case of hip-joint tuberculosis in children at the Country Branch whose general

appearance from every point of view was that of robust health, but who showed unmistakably the steady progress of the disease in its destructive effect upon the hip-joint. This has occurred in spite of the fact that they had the advantage of exposure to the sun's rays for about eight months of each year, which brings up the question of the influence of heliotherapy on joint tuberculosis. There is no evidence yet to prove that heliotherapy has any particular influence upon the progress of the disease, and there is grave danger that the belief that it does so, which is so generally accepted, may delay the proper study of this disease for another decade." Dr. Hibbs has been so impressed with the difficulties of exact diagnosis in joint tuberculosis, and with the vitiation of statistics of so-called cures as a result of wrong diagnosis, that he now refuses to treat a case for tuberculosis of the hip until the diagnosis has been established by aspiration and guinea-pig inoculation, or by exploratory operation. My personal experience, although much more limited than that of Dr. Hibbs, supports his contention. It is not so many years since we learned to distinguish between Perthes' disease and tuberculosis of the hip. Perthes' disease always results favourably, even when treated indifferently or not treated at all, and we now know that many cases of reported triumphant cures of hip-joint tuberculosis by conservative measures, the patient recovering with almost perfect function, were not cases of tuberculosis at all, but cases of Perthes' disease. I have been so impressed with the uncertainty of permanent cure by conservative measures in tuberculosis of the hip and knee that for many years past I have regularly taught my students that the only safe tuberculous hip or knee is the one in which bony ankylosis has finally occurred, and that this is the desirable outcome.

It was his dissatisfaction with the results of the older methods of treatment which led Dr. Hibbs to devise his fusion operation for Pott's disease. Later, in 1926, he described to the American Orthopædic Association a method of extra-articular fusion of the hip, which he had practised in a considerable number of cases with the result of curing the local condition in a short time, the rapidity of cure being comparable to that which was brought about by his fusion operation on the spine. Stimulated by this report other surgeons have devised other, and perhaps simpler and even more efficient, methods of bringing about bony fixation in the hip; and in the writer's opinion these operations have been so perfected that some form of fusion should be employed in most cases of tuberculosis of the hip in children past five or six years of age. In some of the more destructive cases in young children it is better in my opinion to do first a rapid excision of the diseased head of the femur and the softened portions of the acetabulum, an operation which can be completed in a few minutes by using the Kocher approach to the hip. The immediate relief of pain and the rapid improvement of health which follows this preliminary excision is sometimes very striking; it is just as if a crushing load had been lifted from the patient's enfeebled system. Later, after this recovery of health has occurred, permanent fixation of the joint in the most favourable position should be brought about by one of the methods of fusion.

What has been said about the change of opinion regarding the best treatment of tuberculosis of the hip applies with equal force to tuberculosis of the knee. Such operations as erasion and excision of this joint in children were tried many years ago, but were largely abandoned owing to the deplorable shortening and frequent deformity which resulted from interference with the epiphyseal cartilages of the tibia and femur at the time of operation. For many years I have taught that in adults excision should be performed in all cases as soon as the diagnosis was fully established. My practice was based on observation of the fact that such a large proportion of these patients were finally forced to submit to radical operation after wasting years, often of the most valuable and productive period of their lives, in fruitless efforts to have a cure effected by conservative measures. In my own practice excision was gradually extended to the severer cases in children, and I am now fully convinced that, except in the mildest cases, a well-performed resection of the joint is the best treatment even in children as young as eight or nine years. If the operation is done early, before much destruction of the epiphyses has occurred, the removal of a very thin slice of bone from the condyles of the femur and the head of the tibia, without invading the epiphyseal lines, will expose sufficient raw bony

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surface to assure bony ankylosis, especially if the plan of using the patella and flaps raised from the sides of the condyles as bony bridges across the front and sides of the joint be employed. This method of excision was fully described by me in a paper which I read before the American Orthopædic Association and which was published in the *Journal of Bone and Joint Surgery* in November, 1917. (Figs. 3, 4, 5, 6, and 7 are illustrative). I grant

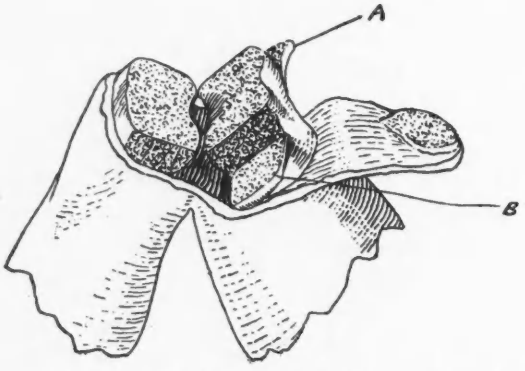

FIG. 3.—Joint widely opened, articular surfaces of tibia and femur removed after raising bone flaps A and B from lateral aspect of condyles; sides of head of tibia denuded; articular surface of patella removed.

FIG. 4

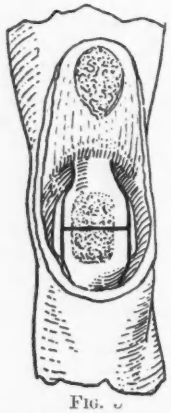

FIG. 5

FIG. 4.—Initial incision. FIG. 5.—Showing denuded surface on anterior aspect of tibia and femur to which patella is to be nailed; also lateral bone flaps in final position.

freely that no matter how carefully the operation is performed in young children irregular epiphyseal growth sometimes occurs afterwards, producing such deformities as flexion, genu varum, genu recurvatum, or a combination of some of these. Such deformities have happened in my own hands, but the correction of these secondary distortions a few years later, should they occur, by removing a wedge from the ankylosed joint, is such a simple matter that the possibility of their occurrence has ceased to worry me. All that is necessary is to warn the parents of the child in advance that such irregular growth may possibly occur and require a small secondary operation at a later date.

To sum up. My personal judgment is that a

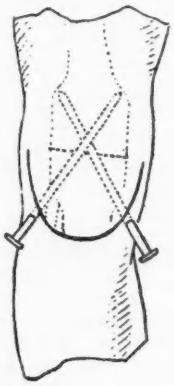

FIG. 6.—Tibia nailed to femur.

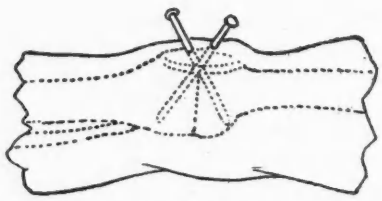

FIG. 7.—Patella nailed in position across femur and tibia.

tuberculous spine, hip, or knee is rarely safe unless and until permanent fixation has occurred, and that modern fusion and ankylosing operations have been developed to the point where they may be employed with practical safety and certainty even at a comparatively early age. By substituting these more modern methods for the tedious and uncertain treatment often employed, much suffering, inconvenience and expense are saved and patients are restored to relative health and efficiency in a fraction of the time formerly required, and serious complications, such as abscesses, and secondary infection, can often be avoided. The economic advantages are so obvious as not to require discussion. In pre-Listerian times, however, such operations would have been too dangerous to be attempted.

CONGENITAL DISLOCATION OF THE HIP

One of the triumphs of modern orthopædic surgery is the successful treatment of congenital dislocation of the hip. It is only since about the beginning of this century that this condition has been regarded as curable. Some form of manipulative reduction is still employed by the majority of surgeons, but the open operation is steadily gaining in favour and being more and more largely employed. The late Harry M. Sherman, of San Francisco, was the first on this continent to perform the open operation in a fairly large series of cases. The writer has used the open operation exclusively during the past eighteen years and could not be induced to return to the distracting uncertainties of the older method of manipulative reduction. One of the interesting developments in the treatment of this deformity is the gradual evolution of operative methods in the management of the neglected cases so often seen in older children and adults. Actual reduction in many of these is impossible, and the surgeon must choose between letting them alone or attempting to improve the patient's condition by some kind of surgical compromise. Turning down a shelf of bone from the ilium so as to provide a solid support above the dislocated head is a very useful procedure and will materially benefit a considerable proportion of the older patients; and is also usefully employed in younger patients when the acetabulum is so shallow as to permit the head to become redislocated after it has been reduced. A most ingenious operation has recently been proposed by Hey Groves Briefly, this consists of reaming out a new acetabulum on the ilium, and then, after detaching the capsule from its pelvic attachment and sewing it over the head of the femur, implanting the head, covered by the capsule, into the newly formed socket. The outside of the capsule grows fast to the new socket, forming a most satisfactory lining; and as the interior of the capsule is furnished with synovial membrane this ingenious method creates a new articulation having all the elements of a stable and movable joint. Many surgeons have tried the plan of reaming out a new acetabulum and implanting the head into the raw cavity, but nearly all of such operations have resulted in more or less ankylosis; so that while stability has been secured mobility has been abolished or greatly curtailed. The new operation proposed by Hey Groves has to stand the test of further experience, but it is one of those surgical procedures which appears to be at once sound and reasonable.

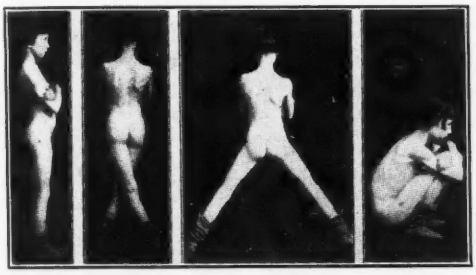

FIG. 8 FIG. 9 FIG. 10 FIG. 11

Congenital dislocation both hips. Left hip reduced by open operation September 9, 1919; right reduced January 24, 1920. These photos were taken April 3, 1926,—more than six years after operation.

Thus within a few decades a deformity which was considered hopeless, even in young children, is being brought more and more under control in the case of older children and adults, by operations which could not have been attempted in the pre-Listerian period.

SYNOVECTOMY

An operation which seems to be steadily gaining in favour is synovectomy as applied to the knee joint. There are conditions of chronic knee-joint trouble, characterized by a thick, pulpy condition of the synovial membrane, which cause the patient marked discomfort and disability. The disease is neither tuberculous nor specific, and the exact pathology is often obscure. In some cases villous fringes and folds are a marked feature. The writer has in mind a recent case where a young woman of twenty-two years had been complaining of one of her knees for over a year, the condition gradually growing worse. The joint was painful after exertion, so that sometimes she could hardly use it; there was noticeable swelling and some local heat. Rest in bed failed to cause appreciable subsidence of the swelling. Finally, full exploration of the joint by the patella-splitting method was decided upon. The entire synovial membrane was found thickened and villous; it was of a dark purplish color, and in appearance and consistence was not unlike liver or placental tissue.

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The whole of the diseased membrane was carefully dissected away, and in a few months the patient had regained practically full movement. The pathological report was: "Chronic inflammatory tissue with some evidence of recent inflammation; no sign of tuberculosis."

About a year later the patient's other knee became similarly affected and was dealt with in the same way with an equally good result. I have seen the same condition in one knee of an adult of about forty years. In many cases of chronic synovial thickening conservative treatment fails and radical synovectomy appears to be the only means of cure. To do the operation satisfactorily, complete exposure of the joint by vertical splitting of the patella, ligamentum patellæ, infrapatellar fat pad, and that part of the quadriceps covering the suprapatellar pouch is essential. But how could such a radical procedure be attempted were it not for Lister's discovery?

While speaking of operations on the knee I desire to enter a protest against the too prevalent teaching that entering the knee is comparable as a surgical risk to entering the abdomen. I doubt if any part of the body is so intolerant of infection as the knee joint. It is true that one sometimes sees the knee opened, either accidentally or by a surgeon using only indifferent aseptic precautions, and no harm follows; but he who enters this joint habitually and frequently, feeling that it will take care of infection as successfully as the peritoneum, is merely inviting disaster. The opening of the knee is always a serious surgical responsibility. The most careful preliminary disinfection of the skin and a completely contactless technique must be scrupulously observed. The surgeon who invades this region should persuade himself that there is no margin for mistakes or carelessness, and that his asepsis must be, at least theoretically, perfect, in the laboratory sense.

FRACTURES

It is quite foreign to my purpose to discuss the controversial point as to whether fractures belong to general or to orthopædic surgery. The truth is that they do not belong exclusively to either. It is a matter of medical history, however, that orthopædic specialists have made some of the most notable contributions to the management of these injuries; and inasmuch as the treatment of fractures constitutes a large part of the practice of every modern orthopædic surgeon, and also because in some hospitals the fracture service is largely under the supervision of the orthopædic department, a discussion of these injuries could not fairly be considered out of order in a paper with an orthopædic setting. The temptation to discuss at some length bone-grafting, skeletal traction, internal fixation with plates, etc., is strong; but the time at my disposal makes severe curtailment imperative. It would be easy to occupy all my time by a discussion of bone-grafting alone, for the subject is both important and fascinating, but I shall content myself by trying to answer one question which is often raised, namely,—After how many months or years of non-union may a bone-grafting operation be undertaken with reasonable hope of success? For practical purposes no time limit exists. Strong bony union was secured in one of my patients by bone-grafting after fourteen years of non-union of both bones of the forearm. In another patient, after three operations to overcome non-union of the humerus had failed, success followed using a portion of the whole shaft of the fibula as a graft, this being supplemented by osteoperiosteal grafts from the tibia applied circumferentially.

I shall dismiss further discussion of the subject of fractures by a brief reference to two contributions by well-known surgeons whose practice is exclusively orthopædic. In treating many fractures of the femur and some of the leg the Thomas splint is almost invaluable. Unfortunately, however, the pressure of the ring is not only uncomfortable but is very apt to cause pressure sores. This difficulty may be entirely overcome by employing a little known method of traction originated by Michael Hoke, of Atlanta, Georgia. Into a short plaster spica which surrounds the pelvis and upper part of the thigh on the injured side are incorporated the upper ends of the side bars of what is practically a Thomas splint minus the ring. The thigh portion of the plaster is little more than a wide collar, and its upper edge must not come within a couple of inches of the perineum. The plaster is also carried down on the opposite extremity so as to include the foot, which is placed at right angles to the leg. In the case of young children

traction may be applied by the usual adhesive strips, but skeletal traction is preferable in older children and in adults. Calipers may be used, but my personal preference is for a pin passed through the femur just above the condyles or through the lower part of the tibia or the os calcis. The degree of traction can be accurately controlled by a butterfly nut arranged on a screw, as shown in the illustration. As soon as traction is applied it tends to push the whole plaster dressing up on the patient's body, but the plaster cannot move upward owing to the inclusion of the opposite limb. Thus perfect resistance is provided and all counter-pressure comes against the broad sole of the foot, a surface which is not only adapted to pressure but accustomed to it, instead of being secured by the ring of the Thomas splint pressing against surfaces not so well adapted to pressure. This method of securing extension I have found invaluable, not only in fractures but in certain other conditions. The pin through the bone, if aseptically introduced, causes neither trouble nor pain.

FIG. 12.—Michael Hoke's method of traction.

The other matter to which I wish to direct attention is the Whitman reconstruction operation for ununited fractures of the neck of the femur. There is much difference of opinion as to the proper treatment of this condition; but Whitman's operation is undoubtedly a valuable aid in many cases, providing stability, a good range of movement, and almost perfect muscular control. My experience with this operation is limited but on the whole favourable. Instead of exposing the hip by the incision employed by the author of the operation, my personal preference is for the Kocher approach to the hip, but this is a mere detail.

CURVED OSTEOTOMY

The deliberate cutting through of a bone and placing the ends of fragments in such relation as to correct deformity must have appeared a bold surgical procedure to the surgeons who first carried it out. It is said that Lister was the first to perform such an operation for genu valgum. Osteotomy has long been recognized as an extremely useful operation, which has its chief application in the correction of knock-knee, bow-legs, ankylosis of the hip in a bad position and malunited fractures. Formerly, so-called subcutaneous osteotomies were the rule, and in the earlier years of my practice I habitually performed these operations through an incision only large enough to admit a narrow chisel. This subcutaneous method is an inheritance from the time when surgeons were more or less afraid to inflict wounds because of the danger of infection, and in my opinion it has no place in modern surgery. An exposure sufficient to enable the surgeon to see what he is doing is not only more scientific but less risky. Linear osteotomy and cuneiform osteotomy are well known, but the curved osteotomy first proposed by R. G. Brackett, of Boston, seventeen years ago, although little known, is better and safer in a considerable proportion of all cases where osteotomy is indicated. Brackett first proposed this curved incision through the bone—which he called the "curved Gant"—as a substitute for the subcutaneous linear osteotomy commonly performed to correct flexion and adduction deformity at the hip. His paper is illustrated with x-ray pictures showing most unsatisfactory relation of the fragments in many of the cases treated by the older method. These illustrations make it plain that the fragments frequently slipped past one another and sometimes assumed the most extraordinary and bizarre relation. With full exposure of the upper part of the femur through a long external incision and retraction of the soft tissues, an approximately semicircular intertrochanteric section of the bone can be made by a very narrow osteotome, and this enables the operator not only to correct the deformity but to make certain that the fragments are so securely

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locked together that they will remain where he has placed them. The same curved section of the bone is altogether preferable to the linear or cuneiform section in the correction of bow-legs and of many malunited fractures.

FIG. 13.—The usual linear osteotomy.

FIG. 14.—E. G. Brackett's curved osteotomy.

RECURRENT DISLOCATION OF THE SHOULDER

Recurrent dislocation of the shoulder has always been a difficult surgical problem. The older operations of reefing the capsule have rarely been permanently satisfactory, especially in the case of men engaged in occupations requiring strenuous use of the arms. The Clairmont operation of supporting the stretched and weakened inferior part of the capsule by detaching the posterior quarter of the deltoid from its insertion, bringing it forward through the quadrilateral space and sewing it to the coracoid process and the coracobrachialis, or to the anterior border of the deltoid, was until recently the most successful method of meeting the condition. The immediate results are excellent, and in many instances, especially in patients not given to strenuous activity, are probably often permanent. However, I have observed relapse in some cases of my own as well as in those operated on by others, and failures have been noted by other writers. A real difficulty is that the detached portion of the deltoid is rarely long enough to reach the coracoid process, and attachment elsewhere is less satisfactory. At the post-mortem examination of a patient upon whom this operation had been performed, and who died later of another affection, the anterior attachment of the transplanted deltoid presented the appearance of a precarious, insufficient, atrophied band.

Hey Groves in 1925 described a most ingenious, simple, and satisfactory method of dealing with these recurrent dislocations. Three short incisions are required. To quote from the author's article: "The first incision is in front below the tip of the coracoid process, and through it all the structures are separated down to the front of the shoulder joint covered by the tendon of the subscapularis. The second incision is behind the posterior border of the deltoid, and is deepened by blunt dissection down to the posterior aspect of the shoulder joint covered by the short rotators. A tunnel is now made connecting the depths of these two incisions, so that a long pair of forceps can be passed from one to the other, keeping close to the inferior part of the capsule. The third incision is made above, over the superior surface of the acromion process. From this tunnels are made joining the first and second incisions but keeping deep to the deltoid muscle. A strip of fascia lata eight inches long by two inches wide is taken from the thigh. It is folded into a band about two-thirds of an inch wide, and is drawn from the anterior to the posterior incision and then its two ends are drawn up through the superior incision and drawn as tight as possible. The two ends are made to overlap, sutured together and to the tissues covering the acromion." Feeling that a bony anchorage for the fascial sling would afford greater security in the few cases which I have done, the plan was adopted of drawing the ends through a tunnel made in the

acromion by means of a small chisel and curette.

This operation is much easier to perform than the Clairmont, leaves the deltoid and all other muscles intact, requires only small wounds about the shoulder, can be performed in less time, and recovery of free, painless movement is more rapid. In my opinion it is much the best method that has been proposed for the management of this troublesome disability. I have performed it in two cases which had relapsed after the Clairmont operation; and Hey Groves refers to one of his patients upon whom a previous Clairmont operation had been unsuccessful, and who returned to his work as a "blacksmith's striker" within three months and had continued at his work for a period of nearly two years.

DEFORMITIES AND DISABILITIES RESULTING FROM PARALYSIS

It would be interesting to follow some of the more recent advances in the surgical treatment of disabilities resulting from poliomyelitis and other forms of paralysis, but only the briefest mention can be made of two or three things. Stabilizing operations on the feet, such as triple arthrodesis and Whitman's method of astragalectomy, have emancipated thousands of patients from cumbersome and unsightly mechanical appliances; inequality of the limbs can be overcome either by shortening the long extremity or by lengthening the short one, thus abolishing the humiliation of having to wear a thick-soled shoe; and improved applications of the principle of tendon and muscle transplantation have greatly reduced the handicaps of many paralytic patients. One of the most striking of these transplantation operations is seen in the treatment of traumatic musculo-spiral paralysis. By transferring the insertion of the pronator teres to the extensors of the wrist, and the flexor carpi radialis and flexor carpi ulnaris to the extensors of the thumb and fingers, the improvement in function is sometimes so unbelievably great as to make both surgeon and patient feel that destruction of the musculo-spiral nerve is far from being an irreparable misfortune.

Instead of exhausting the list of triumphs which Lister's discovery made possible in the orthopædic field I have merely touched the fringe of the subject. Enough has been said, however, to bring once more to our remembrance the fact that Surgery must forever owe to the genius, the vision, the faith and the tireless industry of our great Lister a debt that is not merely vast but infinite.

Where is there a surgeon who, could such a choice be given him, would not rather have been Lister than Shakespeare? Where is there a surgeon who does not think of Lister as an outstanding figure in that small circle of great medical benefactors whose combined achievements have brought to suffering humanity comfort of body comparable to the comfort of soul made available to our race by a certain Nazarene?

No one would question that Lister was a man of clean hands, figuratively as well as literally. No one doubts that his character was above reproach, that he was, in the widest sense, a man of pure heart. No one could imagine that simple, dignified, sincere nature tarnished by anything so unworthy as vanity. No one could look upon that frank, noble countenance and think it possible that such a man could be guility of falsehood, misrepresentation or deceit. And it does not strain the imagination to suggest that in uncovering the dark secrets of wound infection Lister mounted to a divine height and became an agent of the Almighty. Therefore I would choose, as a kind of dedicatory inscription to my address, words from the twenty-fourth Psalm, which I shall allow my fancy to regard as having a prophetic application to this great soul: "Who shall ascend into the hill of the Lord? or who shall stand in his holy place? He that hath clean hands and a pure heart; who hath not lifted up his soul unto vanity, nor sworn deceitfully."

> "Nothing can cover his high fame but Heaven;
> No pyramids set off his memories,
> But the eternal substance of his greatness,—
> To which I leave him."

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A HEREDITARY ECTODERMAL DYSTROPHY*

By H. R. Clouston, B.A., M.D., C.M.,

Huntingdon, Que.

THOUGH extraordinarily rare, according to medical literature, the form of hereditary dystrophy of the hair and nails about to be described, is comparatively a commonplace in this part of Canada, where it is peculiarly associated with the French race. In fact all the cases reported on the American continent have been of French Canadian origin. The only other families referred to in the literature are not only from France but from that section whence came the early settlers to Canada. One can infer a common familial and individual source at some time more than 170 years ago (previous to the Battle of The Plains of Abraham in 1759) That it is not a racial but a familial trait is shown by the fact that the defect readily carries over into German, Anglo-Saxon and West Indian admixtures. The group reported from Buffalo, N.Y., by Jacobsen[1] is a direct branch of our family. Including his cases with ours we have not only the largest family group described (119), but considerably more than all others combined. Of the family about to be reported upon, 40 have been inspected, some closely and some casually. This, also, is a larger number than the combined total of cases seen by all the other writers.

The supposed rarity of the condition seems most astonishing to those of us who recognize it. I know of at least three other family groups which between them would add another hundred or more cases. A study of Chart I shows that on the average each affected individual passed on the defect to three others. A simple calculation would indicate that there are at least six thousand in America, (three to the eighth power).

Constant features are heredity and nail dystrophy.

Heredity

Through unusual circumstances I have seen members of five generations. Two who are great-grandfathers have been examined. These, can give information about their grandmother who was the most remote sufferer from the defect about whom we can obtain a history. She had five children with the dystrophy. One daughter is the ancestress of Jacobsen's group. One son is the head of the group which I can check and cross-check closely, having seen more than half of them. On another son only partial information is readily available, but such as it is, it has been included in the chart. I have excellent reasons for believing that the remaining son and daughter are represented by two groups about which I have some information, but, lacking complete identification, they are not included in any way.

There are 118 descendants of the original woman shown by the incomplete chart to have had the dystrophy.

Sex of Cases		*Parent Affected*	
Males	Females	Father	Mother
57	61	60	58

Children in Groups A, B, C. only

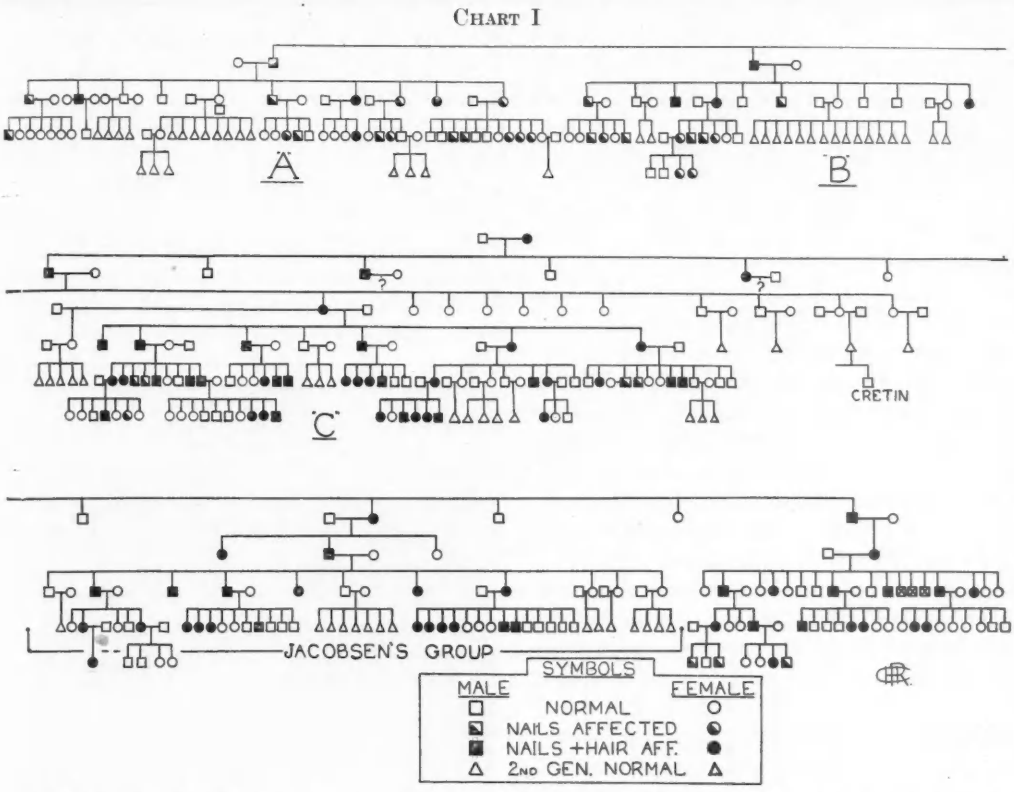
Defective Fathers	Defective Mothers
83 children	82 children
38 defective	41 defective

In other words males and females are equally affected; males and females transmit it equally; and one-half of the children of defectives are defective. It therefore follows the law of a Mendelian hybrid, not sex linked, the defect being a dominant.

Practically always the mating of an affected person with a normal gives a mixed progeny. The apparent exceptions present no difficulty to the students of chance and probability. If a child escapes the defect, he and his heirs are free forever. It never jumps a generation. Moreover, even where the normal child of an affected parent marries the normal child or normal grandchild of an affected person the dystrophy does not return. Neither does it increase the dystrophy in the children when the affected person marries a normal who is de-

* Read before the Montreal Medico-Chirurgical Society November 17, 1928, and the General Session of The Canadian Medical Association, June 21, 1929.

CHART I



The three sections fitted together from left to right form a single family tree. No attempt has been made to chart any normal line after the 2nd generation, and in some instances the single triangle represents a whole family of normals. In no case has the dystrophy occurred in the family of "normals".

scended from a defective. We have instances illustrating all three. As a dominant it is either visibly present or wholly cast out.

White[2] has reported a group in which it was said that there was one instance where the normal child of an affected parent was the father of a defective child. Thompson,[3] in the case of a familial nail dystrophy, also reports an alleged instance of reappearance of the defect. Neither White nor Thompson were able to confirm this personally. We also ran across an alleged instance, only to find on inquiry that a wife had given misinformation about her husband. A learned and philosophical member of the affected group, who had made some study of the family, laid it down as a law that normal parents never begat defective children, and if it appeared to be so, there was evidently "a cuckoo in the nest."

There is a belief among them that the condition tends to die out, both as to the number affected and its severity. There is much evidence to support this in the case of some groups. On the other hand there are at least three instances where the children have a more severe grade than the parents. There are also cases in the sixth generation in which the dystrophy is nearly as severe as it ever was, and families where the proportion is just as great or greater. (See group "C").

The condition is not wholly characterized by any fixed signs or symptoms, and the difference in the clinical findings noted by the various reporters seems partly due to their scarcity of clinical material, and partly to the great variety of forms in which the interplay of many factors permits them to be expressed. One sees every degree of defect. They themselves divide the afflicted ones into two groups, *viz.*, (1) those with "bad nails and bad hair", and (2) those with "bad nails only". On close examination of a large number this is seen to be inaccurate. Members of the family will disagree on the classification of certain border line cases, and actually

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there is every grade of the condition to be found. The individual who admits that he is in the first class either wears a wig or other head covering constantly, except when in bed. A few have the moral courage to disregard this custom.

We shall take up the subjects under separate headings, as The Nails, The Hair, The Eyebrows, etc.

THE NAILS

No case has been counted among the dystrophic ones unless the nails were involved. The toe nails are always affected when the finger nails are. As Nicolle and Hallipré[4] noted, the nail defect is more persistent than that of the hair. This suggests that certain familial nail dystrophies may really be milder expressions of the same condition. (*e.g.*, Thompson's cases were found to be of French origin).

Microscopic examination of scrapings has proved negative for mycoses in our cases as well as in all others recorded. Moreover, the distinctive condition can be recognized in the newborn child.

The nail defect varies enormously and several degrees of dystrophy are frequently found on the same hand. As might be expected in an hereditary condition there is a tendency towards a symmetrical arrangement. In the mildest condition noted the nails were merely thickened and slightly discoloured, striated longitudinally, and, if long, were bent forward at the finger-tip like a beginning claw. The appearance is little different from the condition seen on the hands of those whose nails are subject to trauma, but the growth, if any, is extremely slow. It is common to find one or more of this grade even in the severest cases. In only one case were they all of this class.

A second grade shows a concave free edge behind the normal line and great convexity from side to side. In infancy the nail may be milky white and thick, as though watersoaked. In early childhood the surface layers of the nail seem to be more concentrated and normal, but bulged from beneath by imperfect horn. If the nail is long it will be found that it is really separated from the nail bed for at least the forward one-third and for varying distances farther back as the condition is more severe. Some of those affected state that this forward bayonet-like projection naturally tends to accumulate dirt, and that it is liable to catch on things and be torn backward, with resultant infection. They say that they keep their nails trimmed back to the nail bed. Trimming is very seldom necessary. The forward part may seem to dry and wither and show a distinct line of demarcation from side to side. (This is possibly the result of the action of soap, water, the elements, and trauma on both sides of a nail which is growing extremely slowly). In a seven year old boy a crack appeared along this line and the withered portion fell off. The sharper border then tends to wear off and may result as shown in Fig. 1.

FIG. 1.—Mild form of nail dystrophy associated with good hair.

In a more severe grade there is a central ridge which runs forward and upward. The nail may be split along this ridge, as seen in Fig. 2. In some cases the underlying debris seems to have escaped and the divided portions lie flatter. If the separate pieces grow they may curve forward in opposite directions, or, if they do not, there may be only short tags of nail at the root. Some of these defective nails are very deeply pigmented.

A still worse grade shows only a pigmented fringe of nail bed around the nail grooves, or there may be only cicatricial tissue where the nail should be. (Fig. 3).

Defective nutrition, becoming progressively worse the greater the distance from the lateral vessels, might explain the slower central growth and the consequent concave free edge and also the central splitting. Defective nutrition is also displayed in the proneness to sub-ungual inflammation as the result of slight trauma. This condition is very slow in healing. Nicolle and Hallipré were greatly impressed by the vile stink which is a constant feature of this suppuration.

The victim can readily agree with Lady Macbeth that "All the perfumes of Arabia will not sweeten this little hand." As a means of fighting the Devil with fire, iodoform is preferred by some, but thymol iodide, etc., are very useful. There is a persistent belief among these families that about puberty there is a change from the nails of childhood towards the condition which they will assume for the rest of life. They say that there is more inflammation about this period and that the nails come off, break off, or split, etc. Observation tends to confirm this statement. This may be due to the increased liability to injury as the older children begin to work. If however the condition has an endocrine association, as some believe, this may have some significance. Inflammation is much less frequent after the age of twenty-five than before it. Wholly unconfirmed is the idea held by some of their fellow citizens that the attacks correspond with some phase of the moon or menstrual cycle.

FIG. 2.—Note the clubbing of ring-finger.

FIG. 3.—Severe grade. Note the absence of nails on some fingers.

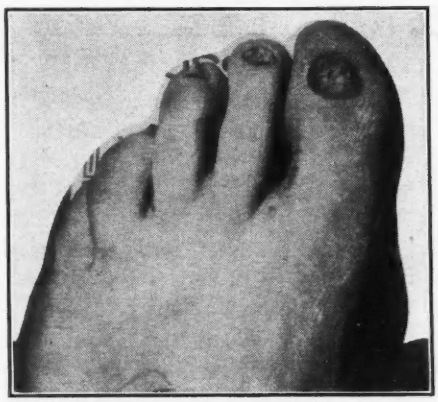

FIG. 4.—The toenails are always affected when the fingernails are.

THE HAIR

According to their own classification of themselves (largely followed on the chart), about one-half of the patients have good hair. They are nearly half right. About 20 per cent of those inspected showed no discernable dystrophy of the hair. They range in age from 3 months to 16 years. It is worthy of note that in those inspected no individual over sixteen years of age who had dystrophy of the nails failed to show some of the hair also. It is quite possible that some of those now considered normal will not be so classed as they grow older. On the other hand, it gives support to the belief that there are some forces at work tending to make the condition "run out." They say that their hair does not wear well. The growth at best is very slow, and when the destruction due to wear overtakes the replacement power the defect appears. In the mildest condition the hair, though fine in texture, seems normal on the top, the front, and the sides, but somewhat shorter, finer and more lifeless from the occiput down the back of the neck. To girls of this grade the modern method of hair dressing known as the "Boyish Bob" was a godsend. The short hairs could be equalized and the use of certain lotions would make the hair appear more normal. In a more severe grade there may be a bald spot from the occiput downward, with the edges passing gradually into more or less normal hair. Presumably this is just where the head touches the pillow. Practically always one can account for any patchiness by friction and wear. Where a complete wig is worn, the distribution of the short, sparse hair is often remarkably uniform.

There are successive gradations in which the hair is shorter and shorter and more sparse, until there is only a slight lanugo-like growth which may not be apparent a few feet away.

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In a few cases there was no hair of any kind. These are older people. They will usually give a history of "fever," or insist that the wearing of the wig is responsible for the complete baldness. It is to be understood of course that one grade does not necessarily pass into another, except as the hair may deteriorate in normal people and for the same reasons. The youngest child may be almost completely hairless and remain so, as shown in the family history, for 113 years.

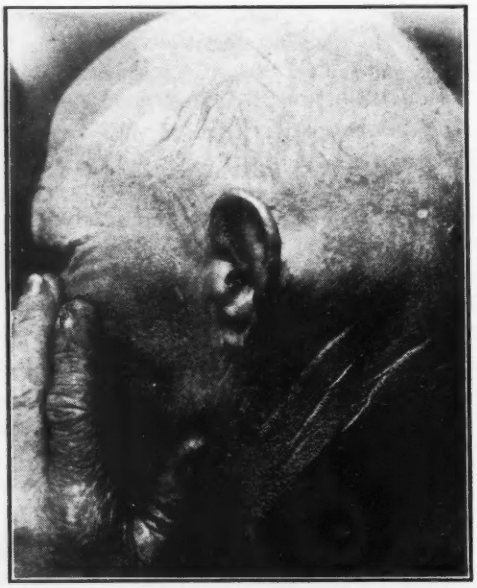

FIG. 5.—A common hair condition.

French Canadians as a rule are dark haired people, although there is also a blond strain, derived probably from the Norse vikings who swept Northern France and mingled there with the dark haired Franks. In this family there is an unusually large proportion of blonds, as was true also of the cases of Nicolle and Halipré of Rouen. This blondness, when present, accentuates the apparent amount of the dystrophy—the blond fine short lanugo-like hair being almost invisible (Fig. 6). It is not an essential part of the dystrophy, however, as is shown by the fact that there are some good heads of golden hair in children showing the nail defect, and also by the fact that some of the most marked cases have dark pigment in the lanugo-like hair. Indeed, in some instances, the scalp of a victim would be absolutely interchangeable with the skin from the leg of a normal brunette. It is a blondness and not an albinism.

The hair is very fine and is rather dry and brittle. Microscopic examination shows only a fine hair, otherwise normal. Some writers have found that the hair pulls out very readily. This is not a feature of my cases. There is also the statement that the hair falls out at eight or nine months and never returns. Experience with this family would indicate that this is merely a shedding of embryonic hair which occurs frequently in normal babies as a normal process. Many of this family have the extreme form of dystrophy from birth.

FIG. 6.—A boy of the sixth generation.

THE EYEBROWS

The eyebrow condition is perhaps the most striking feature of the dystrophy. The head may be hidden by a wig or hat. The nails are so instinctively hidden that those in close contact with the sufferers may never see their deformities. But the eyebrows proclaim to the initiated not only the condition but the extent thereof. In hyperthyroidism the eyebrow is

frequently thinned in the outer third. In this condition, with extremely rare exceptions, it is thinned in the outer two-thirds. Usually this section is thinned so much that it appears absent at a short distance and often is missing altogether. The condition of the inner third indicates with fair accuracy the amount of hair on the head. When there is hair, the dividing line between the inner and the outer two-thirds is usually quite abrupt (see Fig. 7). This line

FIG. 7.—The eyebrow sign. The eyebrow stops abruptly at the supra-orbital notch. Note the pigmentation of the knuckles.

corresponds to the supraorbital notch which carries the artery, vein, and nerve, and is presumably an embryological division. Eisenstaedt's pictures show this division, but no writer seems to have noted the exact line.

The eyelashes are small and few in number, corresponding to the general condition. Sometimes they are entirely absent.

The pubic hair holds its normal proportion to that of the head. It is sometimes entirely missing. When present, is usually of the female type of distribution—confined to the mons—and may be compared to that of normal youths at the beginning of the pubescent changes. Axillary hair is present or lacking according to the condition of the rest of the body. On other parts of the body there is extremely little if any growth. Occasionally a man with a quite severe type of the dystrophy shows a fair amount of hair on the chest, but ordinarily the lanugo hair is as conspicuously affected as the rest. In one case there was a thin moustache.

THE SKIN

Since the hair and nails are only appendages of the epidermis, one might expect to find further epidermal dystrophy. Since the one constant factor is the dystrophy of the nails and since the nails are merely thickened stratum lucidum, one would look for signs of it in those spots where the stratum lucidum is present, *i.e.*, the palms of the hands, soles of the feet, etc. In very few cases was it entirely lacking. This condition, like all the others, varies so greatly, and the milder grades shade into the normal so gently, that the observer must know what he seeks and where to find it. Tobias[5] noted some thickening of the skin on the distal phalanges and the verrucous condition at the free borders of the nails. Eisenstaedt[6] also noted this and an increase in volume of the same phalanges. He also noted a papillary hypertrophy and pigmentation in the axillary region and the anterior surfaces of the knees which was suggestive of acanthosis nigricans. None of the writers on the familial type of this dystrophy seem to have noted the very striking condition of many of the hands. Sutton remarks on the hyperkeratosis sometimes accompanying dystrophy of the nails and Gottheil,[7] discussing Eisenstaedt's cases, says that it is evidently closely related to the hereditary type of hyperkeratosis of the palms and soles.

Nearly always there is a papilliform hypertrophy on the lateral and posterior surfaces of the phalangeal and metacarpo-phalangeal joints and the free edge of the nail. This also occurs sometimes on the elbows and knees. Frequently the whole palm and sole have an extraordinary appearance (Fig. 8). The natural lines are much accentuated. The furrows and ridges, when definable at all, are much coarser than normal and have some tendency to intercommunications, "like the bark of an elm tree." Over the remainder it would appear that the ridges were divided irregularly at right angles. When the papillary projections so formed are fine they resemble

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the "pile" of a carpet and can be parted in the same way so that one can look down into the base. In the coarser forms the result is an irregular mosaic. Usually there is not the hard consistency about the surface which one would expect from the thickening. In one case with the severest dystrophy, in a man who was engaged in heavy manual labour, there was the appearance that the projections had worn off the bearing surfaces of the palms. It was present on the lateral and posterior surfaces

FIG. 8.—Hyperkertosis; pigmentation; clubbing of fingers.

of the phalangeal joints. The resultant surface was abnormally smooth and the palms were curved forward as though by the contraction of scar tissue. There was the history of a cracking of the skin with infection.

The degree of skin alteration does not run absolutely parallel with the severity of the hair and nail dystrophy. It is more marked in the males than in the females and more in the adult than in the child. In the lightest case recognized as one of the dystrophic ones the hair was good (the eyebrows met across the forehead), yet the palmar condition was very marked. It is evident that here is the link between this dystrophy and the condition known as keratosis palmaris et plantaris.

It has not been possible to obtain a piece of the whole skin from these parts for microscopic examination, but in one case the surface layers were lifted from the sole of the foot of a boy by a large pustular bulla. The new soft skin underneath seemed nearly normal, and the change from normal to abnormal seemed to have occurred in the surface layer. In this separated piece the openings of the sweat glands were very large and appeared to be the factor which divided the ridges into papillæ. The papillæ on the surface, therefore, do not represent the papillæ of the corium which are much smaller. "A ridge is composed of two or more rows of papillæ and the ducts of the sweat glands emerge between rows of papillæ and open on the curved surfce ridges." Gray's Anatomy).

Apart from the skin of the palms, soles, phalanges, and occasionally the elbows and knees, there was no roughening elsewhere.

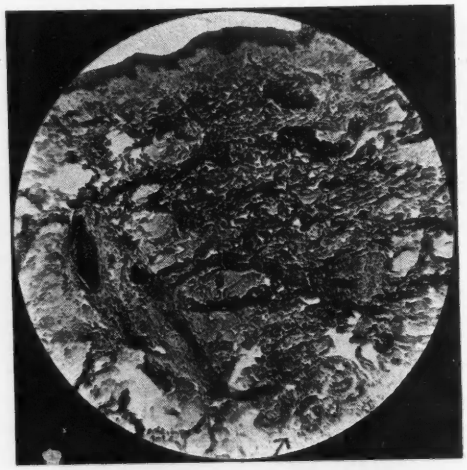

FIG. 9.—Microscopic section. Note the sweat gland which differentiates the condition from the MacKee-Andrews defect.

Indeed before middle age the skin seems to be of very fine texture. Its striking smoothness apparently is due to the absence of hair and follicles.

Clinically the sweat glands are very active. The female mammæ (which are modified sweat glands) are unusually excellent. Some of the mothers nurse their babies for two years and more as a contraceptive measure.

It is difficult to judge the condition of the sebaceous glands macroscopically. The skin is dry. The hair is rather dry. Both sexes seem to be comparatively free from acne.

Through the courtesy of Dr. J. F. Burgess, a microphotograph of a section of the skin of the scalp is reproduced. The patient was a female, seven years of age, and a member of the sixth generation of this family. The section is from the mid vertex and shows the sparseness of the hair follicles and their small size. No sebaceous glands were found in any part of the specimen removed, but occasionally

there were clumps of cells in the appropriate position which might represent them in a rudimentary state. The sweat glands are relatively few in number, but definitely present and normal. The derma is thin and somewhat atrophic. There is absolutely no suggestion of myxœdema.

MacKee and Andrews[8] have described and photographed a "Congenital ectodermal defect" which shows an astonishing number of similar characteristics, but there are also equally striking differences. In their cases there are no sweat glands and no sweating. In the dystrophy described here there is free sweating. The section shows a sweat gland (Fig. 9). Their cases have different racial origins, do not follow definite Mendelian laws in heredity, have papular skin on the face, and invariably have saddle-backed noses. In my cases there are smooth skins and there are some well marked Roman noses.

In this family a nail defect is constant and the tooth anomalies are relatively slight. In the other type the nail deficiencies are of a less severe form and are not constant, but the teeth are very markedly affected both in numbers and in conformation. Weech,[18] in an article which was published since this paper was first read, calls the other type the anhidrotic form of ectodermal dysplasia).

PIGMENTATION

A characteristic often remarked upon is a colouring which suggests the orientals. This is not intense enough to attract great attention among people who work much out of doors, but certainly they tan readily with a peculiar tinge. In addition there is often increased pigmentation over the phalangeal joints and sometimes on the knees and elbows (Fig. 8) The nipple areola is usually relatively dark. There is frequently pigmentation in the axillæ and about the genitals. In one patient a certain black appearance of the palms was subjected to washing with soap and water, gasoline, ether, and alcohol without effect. It seemed to be pigment. He also showed a roughness and deep pigmentation over the tuberosities of the ischium. Some cases show pigmented spots on the skin in other places and in one instance the only trace of an alleged burn was a yellowish patch about three by five inches. One case showed pigmentation of the mucous membrane of the mouth. Many of the nails are coloured deeply. In many cases the teeth are poor and pigmented. There are some notable exceptions to this, however. Another striking feature in some cases is the extreme depth of colour of the iris. This is sometimes so marked that the pupil cannot be distinguished at a short distance.

THE TEETH

As a whole they have poor teeth, but there are some with the severest form of dystrophy whose teeth are very good. In one case there is dependable history of several of the second teeth failing to erupt. Occasionally there is wide spacing. In a year old baby which has been under observation since birth the teeth are erupting normally and there is seldom any history in other children of marked delay.

BODY CONTOUR

The majority of the victims are rather short in stature and light in weight, but they are not marked out in that respect from their normal brothers and sisters. In a few cases they are over the average in height. In less than 10 per cent is there anything suggestive of hypothyroidism.

Frequently there is a relative enlargement of the distal phalanges, both in length and breadth, even in children. This is most marked in the middle and ring fingers. In the adult, especially the male, this may become a definite clubbing and there is an increase in breadth, though the hands are usually small. In one man the hands might almost be said to show gigantism. In another the metacarpals and phalanges are disproportionately long (see Fig. 11). Kyphosis in the older males seems much more common than usual.

NERVOUS AND MENTAL CONDITION

In this, as in every other feature, there is enormous variation. Among those showing the severest dystrophy there is to be found a highly respected city clergyman, a nurse who served in France, the mayor of a village, a manager of a "go-getter" sales force for a large corporation, and a states trooper on the border patrol. It is scarcely necessary to point out that neither

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religion nor learning, neither business nor political acumen, necessarily exempts one from the defects of an inherently weak nervous system nor the effect of endocrine imbalance. On two occasions an outstanding member of the group has required institutional treatment for a "nervous breakdown." On the other hand, in groups A, B, and C (80 cases) there are 7 frankly mental defective (9 per cent). One of these is an idiot. This is a female, who is short and thin, with small bones and a small head and practically hairless. Before being sent to an institution, at about forty years of age, she had never allowed shoes or stockings on her feet. She walked upon the toes and front part of her foot with her heels some inches from the ground. She would not sleep on a bed but curled up on the floor. She carried on a spiteful, senseless chattering. The other mental defectives as a whole are small, and seem to have a mental and physical asthenia.

Two of the mental defectives have strabismus. Strabismus was found 4 times in 80 in the group (5 per cent). In Jacobsen's group there were several who stammered. This has been noted once in this branch of the same family. Epilepsy is present in one case. Nicolle and Hallipré recorded these conditions and state that "they seem to indicate that the dystrophy of the hair and nails is not the sole stigma of decadence in this family of degenerates."

Barrett[9] found a very high proportion of delinquency in his cases and also many neurological defects in members of the family who were free from the dystrophy of the hair and nails. The group that I have studied, on the contrary, is a particularly mild and harmless lot of citizens. Behaviour abnormalities in the normals are no more frequent than in the surrounding population. There is one mental defective and one cretin among the normals, but nothing like the conditions found in Barrett's cases. His photographs do not look like mine. He found a high proportion of myxœdema in his family. Employers of labour state that as a whole these people are under average for their purposes. Even here there is the exception who is better than the average.

To what extent the mental condition is due to the innate and hereditary ectodermic defect, and how much to the oppression on the part of the rest of the human race, is a nice question to decide. One of the first anxious questions after birth is whether it is like the father or the mother. The pregnant neighbour woman turns from them for fear of marking her child. The young savages of the human species with exquisite cruelty chant nicknames and derisive rhymes. School boards sometimes require certificates that they are not diseased. The nail suppuration at times ostracises them from their own social groups. Imagine the mental effect of keeping the nails constantly in hiding. Strange workmen object to them being included in the gang, for fear of syphilis. Remember that their matrimonial opportunities tend to be restricted to those whose opportunities are also limited or to the more broad minded. It is difficult to calculate the effect of this selective breeding for generations. It is obvious that these people have not received a fair deal from man, and they wonder plaintively why God allowed them to come into the world "like that." They do best in occupations which do not call for too great exertion of any kind.

Health Conditions

Their infantile death rate is normal. They seem fairly resistant to infections, and they live to fine old ages. One woman is said to have been proved by birth certificate to have reached the age of 113. Two men, brothers, are 87 and 85. The former splits much of his own wood and is quite active generally. Their father died at 90.

There is absolutely no indication of syphilis and Wassermann tests have been negative.

Endocrine Glands

Most writers suggest an endocrine origin. As there has been no histological or pathological work done, we here enter the realm of pure speculation, but an investigation of the evidence so far secured yields interesting, and hitherto unsuspected results. The various glands will be considered individually.

The Gonads

1. *Female.*—Menstruation is said to have begun at 11 in one of the severest cases and also in one of the milder ones. Another mild case began at 16. No significant relationship could be made out between the amount of dystrophy

and the earliness or lateness of menstruation. The female form and the breasts develop normally. The desire for personal adornment is quite as great as among their normal sisters, and all the "flapper" instincts are quite as fully manifested. At least one was married before 15 years of age. Pregnancies are normal, and abortion or miscarriage is very rare.

2. *Male.*—In the male there are the regular voice changes and there is, sometimes, a slight growth of hair on the face and chest. The amount of hair which appears on the pubes is proportionate to that on the rest of the body, but it shows a tendency to assume the female type of distribution. One gains the impression that among the males there is some retardation

FIG. 10.—Ununited epiphyses in a boy in his 17th year. The dislocation of the radius is congenital.

of maturity. There is support for this idea in the x-ray examination of the hands of two boys in their seventeenth year. The epiphyses are abnormally widely separated. Films of the elbows of one of them show that the epiphyses of the radius and ulna are still ununited. (The radius should unite at puberty and the ulna in the sixteenth year.) Both elbows showed the same condition. The congenital dislocation of the radius which was present in this case permits a better view of the radius than is usual (Fig. 10).

They also tend to marry later than other males in their station. Once matured, a high proportion of them marry, and, if reproduction of the race is any test, it is evident that both sexes are adequate. Furthermore neither castration nor any known form of infantilism produces such nail and hair changes as are here recorded.

THYROID

Some writers have suggested that the condition is basically a thyroid deficiency. Barrett diagnosed myxœdema in some of his cases and proved it by biopsy. Ten per cent of our cases had an appearance suggesting hypothyroidism. However, it is to be remembered that these people and their ancestors have lived in a goitre district, and there seems quite as much thyroid affection in the normal inhabitants as in the affected group. While congenital hypothyroidism or cretinism is well known there has never been found any nail or hair condition to compare with this one. Indeed there is a case of true, and extremely marked, cretinism appearing on the chart as "a normal."

A comparison with our cases shows the following points.

TABLE I.

	Cretin	*This Dystrophy*
When suspected.	Not for months.	At birth.
Dentition.	Delayed.	Mostly normal.
Teeth.	Poor.	May be good.
Skeleton.	Stunted (less than 4'7")	Some over average.
Epiphyses unite.	Late.	Late.
Nose.	Depressed bridge.	Some Roman.
Body.	Thick "pot belly".	Normal.
Legs.	Bowed.	Normal.
Sweating.	Never.	Normal.
Hair.	Coarse.	Very fine.
Eyebrows thinned	Outer third.	At least two-thirds.
Nails.	Thin brittle.	Short thick.
Skin.	Thick, white.	Thin, often pigmented.
Sexually.	Sterile.	Fertile.
Mammæ.	Poor.	Good.
Mentality.	Always dull.	Sometimes bright
Lips.	Thick.	Normal.
Metabolism.	Low.	Varied.
Pulse.	Slow.	Normal.
Hands.	Broad in youth.	Broad in age.
Life.	Usually short.	Often long.

The basal metabolic rate has only been taken twice. Jacobsen found a plus 23 on a child; but points out the unreliability of rates in children. In the only in which it was taken in our group, it was minus 14 in a man of 67. He was 5 feet 6 inches tall and weighed 222 pounds. Unfortunately he is the only male in

those inspected who showed obvious overweight. (It should not be forgotten that hypothyroidism is not the sole cause of a low basal rate.) A well marked case was in the Royal Victoria Hospital, Montreal, with a compound fracture of the tibia and fibula. A report on him says "At that time he did not show any signs of hypothyroidism." He left the hospital after six weeks and in a few months there was no discernable disability. There is no defect in the healing power.

Hypothyroidism undoubtedly is present at some stage in some of the cases, but it is not an essential part of the dystrophy and, as will be seen later, it would appear to be secondary to affections of other glands in the endocrine chain, rather than primary and causative.

SUPRARENAL GLANDS

Eisenstaedt noted a condition suggesting acanthosis nigricans. Such an appearance was present over the tuberosities of the ischium in one of my cases. Acanthosis nigricans is believed to be due to some disturbance of the chromaffin tissue of the abdominal sympathetics, which in turn is similar to that of the adrenal medulla. The pigmentations already noted on the knuckles, knees, elbows, axillæ, nipples and genitals, the exposed parts, etc., may to some extent be explained by the hyperkeratoid condition of the skin. However, in distribution they are suggestive of the earlier stages of Addison's disease.

Blood pressure readings were taken in 14 cases.

TABLE II.—BLOOD PRESSURE READINGS

Case No.	*Sex*	*Age*	*Diastolic*	*Systolic*	*Dystrophy*
10	M	16	60	92	Slight
30	M	16	60	110	Marked
29	M	25	60	110	Marked
33	F (4 para)	30	75	122	Slight
5	F	31	65	90	Severe
17	F (7 para)	34	64	108	Severe
24	M	36	65	95	Severe
24	M	36	70	106	Severe
1	M	43	90	118	Marked
11	F (11 para)	45	65	108	Marked
21	M	50	62	112	Severe
20	F (6 para)	49	78	120	Severe
35	M	84	70	130	Marked
6	M	87	80	180	Severe

Case 10 is shown in Fig. 8. Pigmentation is a feature.

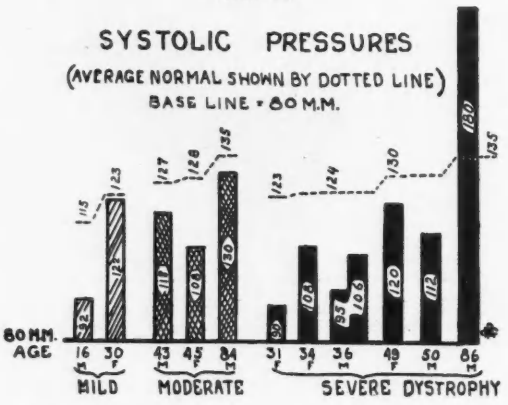
Case 5 died after years of periodic attacks of a condition in which there was great psychic and physical asthenia, and gastric and abdominal disturbances so severe that peritonitis was well simulated. There were very low blood pressures. Pigmentation was not more marked than in other cases.

Case 24 has had two attacks of abdominal distress associated with great muscular weakness and blood pressures of 70-106 and 65-95.

Case 21 has complained for many months of fatiguability and has a blood pressure of 62-112.

In Case 6, a man of 87, there is sufficient arteriosclerosis to show the vessels very distinctly in a skiagram of the hand. If we exclude this case it is seen (Table III) that no other pressure reaches the normal average systolic for the age, nd that the lower pressures show a tendency to accompany the severer dystrophies.

TABLE III



As a whole these people sweat easily.

Altogether, there is considerable evidence of suprarenal dysfunction.

It is interesting to note that the two structures most strikingly involved (*i.e.*, the hair and nails) differ in chemical composition from the rest of the skin chiefly in their greater content of sulphur. Swingle and Wenner,[10] and also Loeper, Decourt and Garcin,[11] find the adrenals to be greatly concerned in the metabolism of sulphur. The medulla of the adrenal is derived from the ectoderm.

In the family groups which show a diminishing severity of the dystrophy there has been a coincident amelioration of living conditions.

In the group showing an increase in numbers and severity there has been an appalling degree of under-privilege. One man tells of a Canadian winter fifty years ago when their sole diet was cornmeal cooked in a frying-pan with candle grease as a lubricant. The profound effect which is produced on the adrenals by starvation or lack of vitamin B may be significant.

THE PITUITARY

If this dystrophy is ectodermal, and if there is any endocrine association, one might look for signs of involvement of the anterior lobe of the pituitary, which is derived directly from the ectoderm. We shall divide the signs and symptoms present in these cases into two main groups.

A. *Symptoms usually attributed to decreased function.*—(1) Late maturity. (2) Delayed union of epiphyses. (3) Thin smooth skin (in youth). (4) Scanty growth of hair of axillæ and beard. (5) Feminine distribution of the scant pubic hair. (6) Sexual hypoplasia. (7) Small sella turcica in all five cases examined.

B. *Symptoms usually attributed to increased function.*—(1) Two cases in which the bones of the hand are disproportionately long (increase before epiphyses united). (2) "Sausage fingers" or clubbed fingers (Figs. 2 and 8. (3) Accentuated normal lines of the skin (after middle life). (4) Kyphosis common in older men. (5) Thickened calvarium, heavy occipital protuberances and enlarged frontal sinuses, which were present in all the skulls x-rayed. (6) Marked tufting of the bones of the terminal phalanges. (7) Broadening of hands.

On this tufting great stress is laid by Cushing[12] and also by Bell[13] as a sign of acromegaly. Towne[14] says that "The characteristic changes" (of acromegaly) "are exostoses of the phalanges, which may be an early radiographic sign of the disease." Dock,[15] in Osler and McCrae's Modern Medicine, says "The tufting of the terminal phalanges is a *unique and diagnostic sign* of acromegaly." Acromegaly is of course ascribed to dysfunction or hyperfunction of the anterior portion of the pituitary body. This tufting of the terminal phalanges was present in every x-ray which has been made of the hands of any adult male. (7 cases, see Fig. 11). However, as this tufting is often associated with some clubbing, two other suggested explanations may

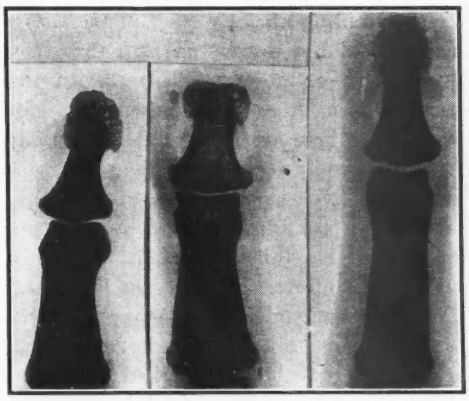


FIG. 11.—These are all from different cases. Note the tufting and the great length of the phalanges of the case on the right.

FIG. 12.—Two other cases showing a tufting of the terminal phalanges which is similar to that found in acromegaly.

be considered. It has been asked whether the clubbing and tufting are due to frequent subungual inflammation with its congestion, *etc.* This seems improbable because the tufting does not appear at the ages when the inflammation is frequent, but only later, when the inflammation has become largely a memory. Furthermore, the bony changes are not confined to the terminal phalanges.

Again it may be objected that the changes are those of secondary (or pulmonary) hypertrophic osteo-arthropathy. Locke,[16] whose authority on this subject seems to be accepted, concludes that hypertrophic pulmonary osteo-arthropathy is always secondary, and that simple clubbing of the fingers and secondary hypertrophic osteo-arthro-

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pathy should be regarded as identical, the former representing an early stage of the latter. He also says of the osseous changes that they closely resemble, or are even identical with, the appearances seen in cases of acromegaly. In this dystrophy there are none of the conditions which are commonly found to be the precursors of secondary hypertrophic osteo-arthropathy. But even if we should accept that as the true explanation of the clubbing, *etc.*, it would not exonerate the anterior part of the pituitary body. Dock in summing up hypertrophic osteo-arthropathy holds that "An endocrine origin seems strongly probable." In that event one naturally suspects that gland which is known to be capable of producing those changes which "closely resemble, or are even identical with it," (*i.e.*, the anterior pituitary body).

X-ray films of the sella turcica in five cases show this cavity to be under, rather than over, the average in size, but in the oldest cases the

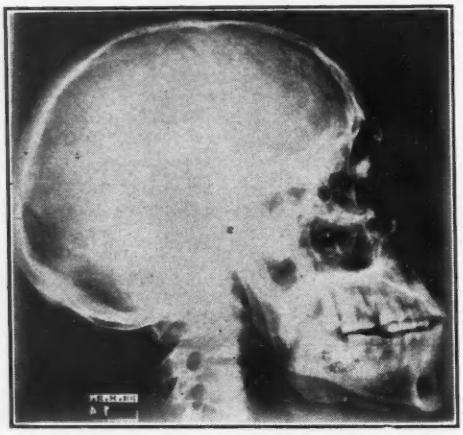

FIG. 13.—Thickened tables of skull; large frontal sinus; heavy occipital protuberance; prominent jaw.

clinoid processes are small and wide open. It is, however, well recognized that acromegaly may occur from hyperfunction or dysfunction of the anterior lobe of the pituitary body without enlargement. There is some support in these cases for the theory of Walter Timme[17] that sometimes the anterior lobe of the pituitary body attempts to compensate for a deficient adrenal, and that this physiological and self-limited response produces certain features of acromegaly.

No symptoms attributed to involvement of the posterior lobe were noted, unless the low blood pressures, and an irregular polyuria or enuresis, which was found occasionally only, can be so explained.

THE PINEAL BODY

Of the pineal gland very little is known, but it is conjectured that it is related to:—

1. The rate of sexual development.
2. Pigmentation.
3. Certain muscular dystrophies.

It will be seen that our dystrophy might establish contact with the pineal gland under two of the three headings. To advance anything further would be the quintessence of futile speculation.

CONCLUSIONS

Notwithstanding the interesting evidence for endocrine involvement, it would seem, in the ordinary sense, that this is a result of the participation in the general dystrophy of the ectoderm, rather than the cause of the whole condition. The deficiency on the part of the sebaceous glands is not merely a suppression of secretion, or a degeneration, but a failure of development, which dates back to before the third month of fœtal life. The eyebrow division is an embryological one.

Equally important is the fact that the cardinal features are present (or absent) at birth. How can one explain on an endocrine basis the fact that the defective mother produces normal and defective children in equal numbers, and likewise that the normal mother also produces normals and defectives in the same equal numbers? There is no difference between the defectives born of normal or defective women, and the normals are equally "normal." Some of the very worst cases have drawn their prenatal and postnatal nourishment from normal mothers, and both grandmothers have been normal. The male germ plasm has carried the defect through two generations of normal women without any change. The condition is as fundamental as the germ plasm itself.

TREATMENT

Treatment must be divided into that of the individual and that of the family. In the individual there may be some slight improvement in the hair conditions by the well known methods of stimulation of the elements already present, but there is no indication that any form of therapy will cause the formation of a pilo-

sebaceous system where it does not exist, even if it could be applied, as would be necessary, before the third month of fetal life. If no effect is produced on the fetus by the internal secretions of a normal mother, it is obviously unreasonable to expect much effect from endocrine preparations from another source which must survive preparation and absorption.

Are these people, then, "compelled to sorrow as those that are without hope?" Not at all. Are Mendelian characteristics immutable? Not at all. In recent times sex itself (a Mendelian characteristic) has been shown to be reversible by the action of the adrenals and the thyroid. But whether it conformed to theory or not, there is the experience of this family itself that the dystrophy is diminishing. We can see every phase in transition in those studied. It is absurd to suppose that there are not less than 6,000 easily recognized cases in America; and less than a score in the literature actually reported as seen. The condition, therefore, *is* disappearing before our very eyes, *and the improvement runs parallel with the improvement in the living conditions of the ancestors.* Help these people by the recognition that the dystrophy is only a pitiable deformity and not a loathsome disease. Remove the economic and social conditions which make for improper nutrition, and in a few generations the condition will be only a curious memory.

SUMMARY

1. This is an analysis of 119 cases in 6 generations of a well marked and easily recognized condition, usually known in the literature as hereditary or familial dystrophy of the hair and nails. Forty cases were inspected.

2. The dystrophy follows the law of Mendelian hybrids, not sex-linked; the defect a dominant. It is estimated that there are more than 6,000 cases in America.

3. The dystrophy involves the epidermis itself, the nails, the hair, sebaceous glands, and to some extent the sweat glands.

4. Clinical evidence is presented that it involves other ectodermal tissues, *e.g.*, the teeth, the nervous system, and the glands of internal secretion of ectodermal origin.

5. Dystrophy of the nails is adopted as the constant factor.

6. The hair condition is a true and general hypotrichosis from birth. It is a failure of the pilo-sebaceous system to develop.

7. The dystrophy tends to diminish in succeeding generations, both as to incidence and severity, and every stage in transition is seen. The improvement seems to coincide with improved living conditions of the ancestors.

8. Familial dystrophy of the nails alone, in some cases, is merely a mild expression of the same condition.

9. Hereditary keratosis plantaris et palmaris, in certain cases, is probably another residual form of the disappearing dystrophy.

10. Involvement of the adrenal medulla is suspected because of symptoms resembling those of Addison's disease in its earlier stages.

11. Involvement of the anterior lobe of the pituitary is held to be responsible for certain features suggestive of those found in acromegaly.

12. Since the condition is as fundamental as the germ plasm, the treatment is familial rather than individual.

I have to thank Dr. L. J. Rhea for much help as well as kindness and patience; Dr. Edward Chandler, who traced out one family group; Dr. Burgess, who supplied the skin section; Dr. Rabinowitch, for the basal metabolism work; and many others on the staff of the Montreal hospitals.

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THE REGULATION OF THE BILE FLOW THROUGH THE BILE PASSAGES*

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SINCE 1924 Dr. Béla Halpert[1] has advocated the view that bile having once entered the gall-bladder never leaves it through the cystic duct but is re-absorbed *in toto* by the gall-bladder mucosa. A new explanation of the formation of gall-stones based on this theory is advanced by him. About the same time, and independently, Sweet[2] expressed a similar idea. According to Halpert, the gall-bladder performs at least two main functions; first, the return of important constituents of the bile into the circulation; and second, the relief and regulation of the pressure within the biliary system by the re-absorption of bile while the sphincter of the ductus choledochus is closed.[3]

Halpert's theory is partly based on anatomical investigation of the structure of the gall-bladder and bile passages.[4] He specially emphasizes the part played by the neck of the gall-bladder, the cystic duct, and the folds of Heister. "These structures," he said, "are the ones entrusted with the control of the passage of bile towards the gall-bladder. Their function is to regulate the inflow and to hinder or prevent outflow."

Halpert's conception is also partly based on experimental results obtained by studying the excretion of methylene blue by the biliary system of the rabbit.[1] It was found that methylene blue injected intravenously (2 c.c. of a 1 per cent solution per kilo weight) appeared in the hepatic bile in from three to fifteen minutes, and reached its highest concentration (1 to 1,000, to 1 to 3,300) before the end of the second hour. Then it dropped gradually and by the end of the sixth hour the concentration of the dye was only 1 to 9,000 and 1 to 36,000. The gall-bladder bile at the same time usually contained from twice to twenty-two times as much methylene blue as was contained in the last specimen of bile obtained from the ductus choledochus. Moreover, at times the concentration of methylene blue in the gall-bladder bile was much higher (1 to 720; 1 to 800) than the highest concentration ever reached in the bile collected from the ductus choledochus.

In another series of experiments methylene blue was fed to rabbits by the stomach tube. Bile collected from the cannulated common bile duct, twelve, eighteen, twenty-four, thirty and thirty-six hours after administration of the dye, contained little if any methylene blue. Methylene blue had practically disappeared from the hepatic bile and urine thirty hours after its administration. On the other hand, bile removed from the gall-bladder contained the dye, even after seventy-two hours, in most instances. In all the experiments the animals were anæsthetized with ether. A special quantitative method was elaborated by Halpert and Hanke for the determination of methylene blue in bile, after converting it from the leuco-form in which the dye is partly excreted into the usual blue form.

No doubt Halpert's theory would greatly simplify our conception of the functions of the gall-bladder and of the bile passages. In particular, it emphasizes one of the well-established functions of the mucous membrane of the gall-bladder, *i.e.*, its reabsorptive power, which, however, has never been denied (cf. Babkin[5]). But can the activity of the gall-bladder be restricted only to this function and to the well known property of regulation of pressure in the bile passages (cf. Mann[6])? We are convinced that there are many well established facts which contradict Halpert's theory of the total re-absorption of the bile in the gall-bladder.

What are these facts? The first question to

* The data reported in this paper formed the basis of a discussion by one of us (B.P.B.) of Béla Halpert's paper, "The functions of the gall-bladder and some of their disturbances in the light of recent investigations," read at the meeting of the New York Pathological Society in the New York Academy of Medicine on May 2, 1929.

be raised is the following: Does the gall-bladder empty its contents regularly and completely into the duodenum, or only, as Halpert and Hanke say, "occasionally and in small quantities"? (In discussing this question there is no necessity to touch the problem of the contraction of the gall-bladder, *i.e.*, of the mechanism of the emptying of the viscus.) The answer to this question is positive. The gall bladder, normally, every day, probably several times during the day, delivers its content into the duodenum.

In dogs with a permanent Pavlov's fistula of the common bile duct, a dark viscid bile is discharged during the first one to two hours after a meal, in some cases containing almost double the amount of solids to be found in the bile in the following hours. (Babkin[7]). The discharge of a thick dark bile soon after the introduction of different substances into the duodenum through the duodenal fistula, or after a meal, has been observed by many investigators (Rost,[8] Klee and Klüpfel,[9] London[10] McMaster and Elman[11]). After extirpation of the gall-bladder, bile collected from the ductus choledochus after a meal, or after the injection into the duodenum of a 25 per cent solution of magnesium sulphate was always light yellow in colour (Winkelstein and Aschner[12]). The conclusion to be drawn from these experiments is that the thick dark bile is delivered by the gall-bladder.

The second argument against Halpert's theory is that the gall-bladder empties itself completely after a meal, especially after a meal consisting of egg-yolk and cream. Evidences of this fact are too numerous to quote here (see the review of this problem in Babkin's book "Die aüssere Sekretion der Verdauungsdrüsen," 2nd ed., 1928, pp. 740-758).

The emptying of the gall-bladder after a meal rich in fat was observed in fish, amphibia, birds and mammals (Higgins and Mann[13]). In our laboratory in cats and dogs we have seen the gall-bladder completely emptied after a meal rich in fat. One of us (Babkin[14]) and Miss Mackay* have seen complete emptying of the gall-bladder after a meal in several species of fishes (fundulus, eelpout, skate, flounder, sculpin, etc.). The gall-bladder bile in different fish of the same species had a different colour, indicating the different time of stagnation of the hepatic bile in the gall-bladder (Mackay[15]).

Dr. E. C. Brooks, of the X-ray Department Royal Victoria Hospital, Montreal, has kindly informed us that in patients under his observation a normal gall-bladder, made opaque by intravenous injection of tetraiodophenolphthalein, emptied completely (the shadow disappears) two hours after a meal of egg-yolk and cream. In some cases on the following day Dr. Brooks could see the opaque matter present in the colon in the region of the hepatic flexure.

The only explanation which can be given to all these facts is that the bile is expelled from the gall-bladder and passes into the duodenum. It is highly improbable that certain stimuli increase the absorption of bile in the gall-bladder to such an extent that in the short period of one and a half to two hours no more bile remains in the gall-bladder. And what of the mucin which is secreted by the mucous membrane of the gall-bladder? Being a native gluco-protein, it cannot be absorbed as such by the epithelium, and there is no corresponding enzyme in the bile to digest it, since the gall-bladder bile always contains mucin and the more concentrated the bile is the more mucin there is.

Then comes the problem of the function of the bile passages. Halpert looks on them chiefly from an anatomical point of view. According to him, the function of the cystic duct, valves of Heister, etc., is to regulate the inflow of bile into the gall-bladder and to hinder or prevent its outflow. We have, however, precise data which show that the bile passages are not merely passive tubes through which the bile flows, but that they assist in the distribution of hepatic bile, directing its flow towards the intestine or towards the gall-bladder, or in both directions. This possibility is indicated by the presence of two sphincters, one the well known Oddi's sphincter at the duodenal orifice of the ductus choledochus, and another, which is located somewhere in the neck of the gall-bladder or in the cystic duct.

In a dog with a permanent fistula of the ductus choledochus (after Pavlov) and of the gall-bladder, it may be observed that during the first four to five hours following a meal of milk or meat hepatic bile flows from the com-

*Personal communication.

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mon bile duct, mucus only being secreted by the gall-bladder. In the last hours of the digestive period bile flows in both directions, and after the completion of digestion it comes only from the gall-bladder fistula. When bread is ingested, bile flows during the first hour exclusively through the common bile duct; later it is directed partly to the intestine and partly to the gall-bladder (Volborth[16]).

The following fact, which was observed by us while repeating Dr. Halpert's experiments, was also very suggestive of the presence of a sphincter in the neck of the gall-bladder. As is well known, the squeezing of bile from the gall-bladder, even when the common bile duct is cannulated, requires a certain force. Our animal (a cat) was fed on egg-yolk and milk, and one hour and fifteen minutes afterwards was anæsthetized with ether and chloroform, the abdomen opened, and the common bile duct cannulated. The slightest pressure on the gall-bladder produced a flow of dark gall-bladder bile. It seems that the presence of certain substances in the duodenum produces a relaxation (reflex?, hormonal?) of the sphincter in the neck of the gall-bladder.

If we add to these data those concerning the contraction of the gall-bladder wall, spontaneously and under the influence of nerves, and the very interesting exchange in the gall-bladder bile of molecules of salts for molecules of mucin, processes much more complicated than the simple re-absorption of bile (Brand[17]), Dr. Halpert's theory is placed in a difficult position. Since his theory of the function of the gall-bladder, if accepted, would influence pathological conceptions of the diseases of the biliary passages, and their medical and surgical treatment, we decided to repeat some of his experiments on different species of animals.

One fact in Dr. Halpert's and Dr. Hanke's experiments struck us particularly. They showed that thirty hours after feeding methylene blue to a rabbit, the dye had practically disappeared from the hepatic bile and the urine. It could be found, however, in most cases in the gall-bladder bile even after seventy-two hours. The question then arises: By what routes does methylene blue, re-absorbed from the gall-bladder, leave the body? It can leave it neither through the liver nor through the kidneys, since both the hepatic bile and the urine are absolutely free of any traces of it forty-two hours after administration. There is, however, a third way, *i.e.*, from the gall-bladder through the common bile duct into the intestine. This probably occurs slowly, since the mucous membrane of the gall-bladder has deep outpouchings (Halpert[4]) in which the coloured bile may stagnate and give up the dye to freshly secreted bile replacing the bile expelled from the gall-bladder. During the actual experiment, of course, this does not occur, since the anæsthetic inhibits the motility of the gall-bladder (Higgins and Mann[18]).

Our experimental problem was defined as follows. Is the gall-bladder bile containing methylene blue discharged into the duodenum? We may answer this question with a positive "yes," as the following experiments will show.

EXPERIMENTS ON CATS AND DOGS

I. April 29, 1929.—Cat, weight 3 kilos, fasting.

10.20 a.m.—Under light ether-chloroform anæsthesia 6 c.c. of 1 per cent methylene blue solution were injected into the femoral vein.

410-418 p.m.—The animal received 100 c.c. of cream and one egg-yolk and ate the whole.

6.40 p.m.—Killed with chloroform and the abdomen opened. Gall-bladder collapsed and containing only 0.2 c.c. of dark green bile. Stomach filled with white masses. The first part of the duodenum (for a distance of 7 cm. from the pylorus) contained yellowish-white masses; further on in the duodenum and in the small intestine were light green masses.

This experiment was interpreted as follows: Dark green gall-bladder bile, containing methylene blue, was expelled after a meal containing much fat into the intestine and stained the white masses of cream there a green colour. (A mixture of brown bile with methylene blue gives a green colour.) The yellow of the food masses in the upper part of the duodenum might be due to the secretion of hepatic bile at this stage of the experiment (*i.e.*, 8 hours, 20 minutes after the intravenous injection of methylene blue, poor in the oxydized form of methylene blue.

II. April 29, 1929.—Cat, weight 2.5 kilos, fasting.

10.35 a.m.—Intravenous injection of 5 c.c. of 1 per cent methylene blue.

4.10 p.m.—The animal received 100 c.c. of cream and one egg-yolk. It ate slowly with pauses, finishing about 5 p.m.

5.25 p.m.—The abdomen opened under ether and chloroform anæsthesia. Stomach filled. Duodenum one inch below pylorus empty; further on greenish-white masses. Common bile duct cannulated, and 1.5 c.c. of bile (A) collected in 30 min. Then the cystic duct was ligated and 1.7 c.c. more bile (B) collected in one hour. Gall-bladder contained 3.1 c.c. dark green bile. Bile A,

collected before ligation of the cystic duct was much darker than bile B, collected after its ligation. These biles were compared in the colorimeter. Although bile A after dilution with water 10 times was greenish in colour, and bile B in the same dilution brownish-green, and the comparison could not be quite exact, still it showed that in bile A the concentration of dye was approximately 2.4 times greater than in bile B.

This experiment was interesting because we caught the gall-bladder at the stage when it was discharging the coloured gall-bladder bile. Bile A contained a large admixture of gall-bladder bile. Bile B, collected after the ligation of the cystic duct, gradually became more and more brownish, since the freshly secreted bile containing less methylene blue washed out the gall-bladder bile from the duct.

III. April 29, 1929.—Dog, weight 8.5 kilos.

10 a.m.—Received 200 grm. of raw horse meat.

2.45 p.m.—From the gall-bladder, the capacity of which was approximately 7 c.c., we aseptically removed 5 c.c. of bile, replacing this with 5 c.c. of 1 per cent solution of methylene blue.

12 noon. April 30, 1929.—The dog received 2 egg-yolks and 250 c.c. of cream.

2.15 p.m.—The animal was killed with ether and chloroform. The gall-bladder contained 2.2 c.c. of dark brown bile, which turned green after shaking with air. Stomach filled; lacteals filled. The contents of the duodenum and of the small intestine were milky. The intestinal contents were very light yellow in the upper part of the intestine, becoming gradually deeper yellow towards the ileum. Three samples of the intestinal contents were collected from different parts of the small intestine. They all turned green after the addition of hydrogen peroxide. Since this green colour might be due to the oxidation of bilirubin to biliverdin, we added to the last sample (end of jejunum) from the intestinal contents (golden yellow before the addition of H_2O_2 and distinctly green after its addition) some alcoholic solution of lead acetate. (Dr. Halpert recommends a solution of lead acetate in alcohol for the precipitation of bile pigments). The green turned to a beautiful light blue, indicating the presence of methylene blue in the intestinal contents.

This experiment may be interpreted as follows. Some time before operation the gall-bladder, after a meal containing much fat, discharged its contents into the intestine, and the bile with the chyme had already passed into the lower parts of the small intestine. The gall-bladder contained a mixture of the old bile and of freshly secreted hepatic bile. The presence of the first kind of bile would explain the fact that after shaking with air the brown bile turned dark green. In the upper part of the intestine was a mixture of food masses and freshly secreted hepatic bile, containing probably a small amount of methylene blue.

IV. April 29, 1929.—Dog, weight 12 kilos, fasting.

3.15 p.m.—We aseptically removed 10 c.c. of bile from the gall-bladder and injected 10 c.c. of 1 per cent solution of methylene blue.

12 noon. April 30, 1929.—Animal was offered cream and egg-yolk, which it licked several times but would not eat. Drank some water.

3 p.m.—Killed with ether and chloroform. Gall-bladder contained 8 c.c. of dark green bile. Duodenum contained green fluid; lacteals a little filled.

Even in this dog, which only licked a little of the cream and egg-yolk and drank water, a small quantity of green bile passed from the gall-bladder into the duodenum. The gall-bladder contained bile deeply stained with methylene blue.

REDUCTION OF METHYLENE BLUE BY THE HEPATIC BILE

In all our experiments, only a few of which are reported here, our attention was attracted by the fact that the hepatic bile when mixed with methylene blue (following intravenous injection of the dye, or its addition in solution to the bile), within from half-an-hour to several hours, changed its colour from green to brown. On shaking with air the green colour returned, but after some time again disappeared. On the other hand, the gall-bladder bile stained with methylene blue retained its dark green hue in some instances for days, in one case for three weeks. Thus the gall-bladder bile possesses the property of preventing the reduction of methylene blue to a leuco-form. We are now investigating the reducing properties of hepatic bile. It seems that the reducing substance is not an enzyme, since boiling only inhibits its reducing power for a certain time (in some cases for 24 hours), after which the bile again decolourizes methylene blue. Bacterial action was not excluded altogether, for the bile was not collected aseptically. In certain instances, however, the bile reduced methylene blue very quickly, say in a half-an-hour, which speaks against a bacterial action. Whether this substance has a certain relation to glutathione or cystein future investigations will show.

EXPERIMENTS ON RABBITS

April 25, 1929.—Rabbit 1, weight 2 kilos.

11.10 a.m.—Injected into the ear vein 4 c.c. of a 1 per cent solution of methylene blue.

Animal was starved and at 4.10 p.m. killed with ether and chloroform. On section, it was found that the gall-bladder was almost empty, containing less than 0.1 c.c. of bright green bile. No food masses in the duodenum, but a small quantity of yellow fluid (bile?).

Rabbit 2, weight 2.3 kilos.

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11 a.m.—We injected 4.5 c.c. of 1 per cent methylene blue solution into the ear vein.

From 12 noon till 3 p.m. food was given (dry oat chaff and water).

4.30 p.m.—We injected into the stomach by means of a stomach tube 60 c.c. of a mixture of cream and one egg-yolk.

6 p.m.—The animal was killed with ether and chloroform. The lacteal vessels were not affected. The gall-bladder contained 0.3 c.c. of light green bile. The duodenum and small intestine contained a small amount of chyme, yellowish- and greenish-white in colour.

We did not try to restore with hydrogen peroxide and lead acetate the methylene-blue colour in the intestinal contents of the rabbits, since at this period of the work we were not taking into account the reducing properties of the hepatic bile.

DISCUSSION

The experiments on cats and dogs show clearly that after a meal of egg-yolk and cream the gall-bladder bile containing methylene blue is discharged into the duodenum. With regard to the experiments on rabbits, we can only say that the gall-bladder in both the animals operated on was practically empty. Special experiments must be performed to prove, as we have done for cats and dogs, that the gall-bladder bile in the rabbit regularly enters the duodenum. Although the digestive system of the rabbit differs greatly from that of carnivorous animals and man, it is doubtful that the function of the gall-bladder in the rabbit is entirely different from that of the analogous organ in other animals. For example, Higgins and Mann[18] have shown that in the guinea-pig, also a herbivorous animal, the gall-bladder empties after a meal rich in fat.

CONCLUSION

In cats and dogs the gall-bladder bile after a meal, especially after a meal containing fat, is regularly discharged into the duodenum.

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REPLACEMENT OF THE THUMB NAIL.—J. Eastman Sheehan, reports the case of a boy, aged 16 years, who suffered the loss of the nail from the left thumb. At the time he was examined, there was no longer any nail growth; at about the level of the lunula there was a disintegrating mass, while toward the point of the thumb the nail bed had given place to cicatrized tissues, warped and folded in leaves. There was considerable pain. It was evident, especially in view of the failure of previous interventions, that the problem was one of replacement —of introducing a nail that would grow. From this consideration two questions arose: Could nail substance transferred to an area in which growth had ceased be expected to grow? If so, from what area should it be taken, and what would be the subsequent history in the area to be denuded? On reflection as to the nature of the nail substance and as to the process of its production, it was recognized as being as truly epithelial as the epidermis itself, and no one who has had experience with reconstructive surgery can fail to have been made aware of the complete dependability of the epidermal graft. The nail of the thumb of the other hand, to which the new one would be expected to conform, must be the donor, rather than the nail of the great toe, the only other practicable resource. The replacement of one thumb nail by a graft from the other thumb seemed therefore to be beyond prospect of misadventure, and the procedure was carried out in that belief, which was completely justified by the result. There was nevertheless a moment of dramatic interest when, on removal of the bandages, inspection disclosed that healthy growth was proceeding on both nails. Thus there was once more triumphantly vindicated the dependability of grafts whose dependence is on the nourishment of living epithelial cells by the lymph fluid present in the tissues of the base, the exceptional feature in this case being the relatively exaggerated thickness of the nail substance as compared with the horny layer of the skin epidermis. —*J. Am. M. Ass.* **92:** 1253, April 13,1929.

THE EFFECT ON DIGESTION AND ASSIMILATION OF INCLUDING BANANAS IN THE MIXED DIET OF SOME CHILDREN OVER FIVE YEARS OF AGE*

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THE nutritive value of the banana as a part of the diet of children of all ages is now widely recognized. Yet there are still many who hesitate to use it as a practicable carbohydrate component of the diet, especially in feeding infants. It may accordingly be in order, before beginning an account of the work reported in this paper, to enumerate some of the more important experimental studies bearing on the use of this fruit in the dietary of children.

Meyers and Rose[1] with adults and children, and Pease and Rose[2] with children only, made a study of the effect of abundant use of the banana in the diet, particularly considering the utilization of carbohydrate, and found entirely satisfactory results, provided that the bananas when used were fully ripe.

H. F. Day[3, 4] reports excellent gains in weight in summer classes of under-nourished children when bananas, milk, whole wheat bread, and butter formed the important items of the diet. Sugiura and Benedict[5, 6] in some studies with albino rats concluded that bananas and milk in proper proportions constitute a complete food, although they found bananas alone too low in their content of protein and vitamin B to provide for maintenance and growth of the rat. Thursfield,[7] Johnston,[8] Meysenburg[9] each reports good results in some careful observations on a number of infants who were given ripe banana pulp as added carbohydrate to their milk feedings. Pritchard[10] used successfully Jamaica banana flour as a gruel combined with milk, obtaining good gains in weight with several infants. The thorough and systematic study of Scriver and Ross[11] should be sufficient to convince the most cautious that ripe bananas can be used with safety as a carbohydrate substitute in the food of infants of all ages.

It has been shown also that the banana has a particular value in the dietetic treatment of nephritis with nitrogen retention, in the prevention of scurvy, and in cœliac disease. Chace and Rose[12] report its use in nephritis. Givens, McClugage and Van Horne[13] and Eddy and Kellogg[14] have made studies showing that it is of value as a protection against scurvy. Eddy and Kellogg also found the banana a good source of vitamin A as well as of some value in providing vitamin B. Its peculiar value as a source of vitamin C lies in the fact that it can be taken in much larger quantities than the more potent antiscorbutics, lemon, orange, and tomato juice, and is at the same time a good carbohydrate food.

The value of the banana in the dietetic treatment of cœliac disease, or chronic intestinal indigestion, is attested by all who have used it. There is general agreement that it is the best tolerated form of carbohydrate in this condition. Haas[15] and Irish[16] report cases showing beneficial effects from its use.

The study here reported is one on the effect on digestion and assimilation when a significant proportion of bananas is included in the mixed diet of children of five to thirteen years of age. The criteria used for judging digestion and assimilation were the retention of fat, nitrogen, and various salts in relation to the intake and the amount and character of the fæcal output. Material for the study was obtained at an institution into which children, undernourished but not ill, are received for varying periods according to their need and given good food, fresh air and regular care. At the time when used for these observations the children had been resident long enough to show the typical rising weight curve following admission. They had good appetites and their hæmoglobin was in no case below 90 per cent.

The plan was to use children in groups according to age, and, as far as practicable, to

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make later observations on the same children when taking an increased number of bananas. A group of four children of approximately the same age took their food at a separate table, being given the regular institutional diet, except that for two of them a selected number of ripe bananas were substituted for carbohydrate food as nearly equivalent as could be arranged. As the regular diet contained little free sugar, desserts mostly consisting of milk, eggs, starch in various forms, all only moderately sweetened, and fruit only once a day, in cooked form, it was necessary to omit starchy foods largely, sometimes even bread, in arranging for the banana replacement. The bananas as given were in the fully ripe stage, when their food content consists almost entirely of sugar, hence there was a slight inconsistency between the banana and control diets. It may be appropriate here to mention that the diet at this institution includes a large proportion of milk, larger perhaps than is commonly given to children of this age, meat and eggs given sparingly, and regularly one vegetable a day besides potato, in addition to plenty of bread and butter, porridge and desserts as above stated. Of course the meat, eggs, vegetables and milk were kept the same in both diets, except that a small portion of milk included in desserts was occasionally lost to the banana diet.

At least two, commonly three, preliminary days were allowed in which the food intake was exactly measured. Just preceding the first meal of the fourth day on which intake was measured, each child was given a charcoal tablet and thereafter for four days each child's urine was collected in twenty-four hour periods and representative food samples taken at the time of measuring the meals were saved for analysis. The collection of fæces began with the first appearance of charcoal in the stools and was continued until a second appearance of charcoal due to a second tablet given just preceding the meal following the four days' collection period.

After a week's interval, with all four children on the institutional diet, another week with measured food intake consisting of three preliminary and four collection days was observed, during which the diets of the two pairs of children were transposed. In this way each child served in a control period for his banana feeding period. The diets of the two study weeks necessarily varied slightly according to the variation in vegetables and desserts, but as the analyses showed, there was very good agreement on the whole as regards the components under consideration. Before starting the observation of another group a few days were allowed the nurse for selecting and testing children as promising candidates for the next month's study. It was necessary not only that the children should be able and willing to co-operate in the collection of urine and fæces but that any child with a real or fancied aversion to bananas should be eliminated. In this manner there were carried through two months' observation on 10 to 13 year old children, one with three bananas a day in the diet, later with six a day; two months, with 7 to 9 year old children, first taking three bananas a day and in the second study, five a day; and one month, with 5 and 6 year old children on three bananas a day.

It is evident that such a plan as this could only be carried through successfully with the help of an able and conscientious nurse in charge of feeding the children and collecting the material for analysis. That we were most fortunate in this respect is shown by the fact that during 160 collection days only four twenty-four-hour urines had to be discarded because of losses. Two control periods had to be omitted; in one case because the girl developed a cold with slight temperature in the interval following her banana feeding period, and in the second because a boy lost his supper during the period following his first charcoal tablet. His nausea was not due to illness but to taking some honey, with which he was apparently unacquainted. As it was impossible to make up a separate food sample corresponding to his reduced intake the period was discarded. In the periods in which the urine losses occurred the urine values were based upon the average of three days instead of four, involving a slight but probably insignificant error. In no case did a child fail to take exactly the same food as the other of the pair on the same diet. The children co-operated well with the nurse and seemed to enjoy the privilege of being selected for a study group.

The fresh material was brought daily to the

TABLE I.

Age Group	Diet	Grams Intake Daily							Percentage of Intake Retained						
		Fat	Nitrogen	Total Ash	CaO	MgO	P_2O_5	Cl	Fat	Nitrogen	Total Ash	CaO	MgO	P_2O_5	Cl
10 to 13 yrs.	With 3 bananas	97.3	16.23	26.14	3.17	.708	5.13	7.82	94.0	22.4	8.6	21.1	32.9	25.4	14.8
	Control	103.0	16.88	26.34	3.30	.615	5.15	8.54	93.0	22.0	12.4	17.9	28.4	24.2	23.6
11 to 13 yrs.	With 6 bananas	91.9	13.16	25.07	2.75	.977	4.86	7.13	94.1	10.0	2.4	17.3	27.4	20.3	12.0
	Control	99.2	14.38	24.30	3.02	.664	4.88	7.92	94.6	16.7	3.8	17.4	19.6	17.6	12.5
8 and 9 yrs.	With 3 bananas	63.4	11.08	20.47	2.29	.664	4.26	5.75	92.8	12.5	6.7	19.8	28.0	27.8	17.0
	Control	67.1	11.56	19.46	2.39	.543	4.25	5.90	93.0	12.7	8.2	25.4	30.0	29.0	14.6
7 and 8 yrs.	With 5 bananas	70.7	11.11	19.36	2.40	.630	3.95	5.28	94.7	11.2	−1.8	15.0	8.8	14.9	4.3
	Control	79.3	12.27	19.21	2.59	.518	4.37	5.82	94.1	20.0	2.0	18.2	15.0	18.4	4.7
5 and 6 yrs.	With 3 bananas	67.4	9.84	14.99	2.11	.484	3.46	4.57	94.4	10.8	−2.5	18.9	21.1	19.8	12.6
	Control	71.7	10.46	14.88	2.23	.406	3.50	5.04	95.1	12.6	−6.4	20.2	13.6	14.4	12.2
Average of all	With bananas	78.1	12.28	21.21	2.54	.693	4.33	6.11	94.0	13.4	2.7	18.4	23.6	21.6	12.1
	Control	84.1	13.11	20.84	2.71	.549	4.43	6.64	93.9	17.0	4.6	19.9	21.9	21.2	13.6

chemical laboratory for analysis. The weight of the moist fæces, the volume of urine, the hydrogen-ion concentration of the fresh urine and fæces were determined, and the fæces and food were immediately set on a steam bath for drying. In the composite four days' samples of urine and of the dried and powdered food and fæces, the total nitrogen, total ash, calcium, magnesium, phosphorus and chloride, as well as the total fat in the food and fæces, were estimated quantitatively by well-known standard methods.

The results of these analyses are given in Table I as grams of intake per 24 hours and per cent of intake retained in averages for each period on banana and on control diet, as well as in the total average for all the children regardless of age or the number of bananas taken.

In Table II are given the averages for group periods and the average for all the children of the 24 hours' volume of urine and of the weight of moist and of dried fæces.

Table III gives the averages for the four children in two age groups who were studied a second time while taking an increased number of bananas. It was only possible to get in each age group two of the same children for the second study. The values for these have been averaged by themselves in an attempt to eliminate the effect of personal variation in judging the effect of increasing the banana intake.

Table IV gives the four days' average of pH of the urine of every child in the banana feeding and in the corresponding control period.

TABLE II.

Age Group	Diet	Daily Average			
		Volume of urine in c.c.	Moist wt. of fæces in grams	Total solids of fæces in grams	Solids: percentage of moist weight
10 to 13 years	With 3 bananas	1355	142.5	29.1	20.4
	Control	1411	157.0	29.3	18.7
11 to 13 years	With 6 bananas	1392	137.6	29.0	21.1
	Control	1457	111.8*	25.0	22.4
8 and 9 years	With 3 bananas	1091	129.3	25.2	19.5
	Control	1135	113.6	22.0	19.4
7 and 8 years	with 5 bananas	1163	147.2	26.4	17.9
	Control	1233	142.7	24.6	17.2
5 and 6 years	With 3 bananas	991	98.1	21.2	21.6
	Control	1219	82.3*	17.9	21.8
Average of all	With bananas	1198	130.9	26.2	20.0
	Control	1285	124.2	24.0	19.4

*3 controls only obtained.

The feeding periods of one week duration were too short, as we expected, to show any marked effect upon weight or general state of nutrition. All the children had rising weight curves, and the weights taken at the beginning and the end of the observation periods fall into the general trend of the curve. In no case was any ill effect shown from the week of banana feeding, whether the intake included three bananas a day or a greater number. One of the older girls on the six banana a day intake developed towards the end of the week a slight rash

TABLE III.

Group	Diet	Percentage of Intake Retained							Urine Daily Average	Fæces Daily Average		
		Fat	Nitrogen	Total Ash	CaO	MgO	P_2O_5	Cl	Volume in c.c.	Moist wt. in grams	Total solids in grams	Solids: percentage of moist wt.
Lloyd and Mary 11 & 13 yrs.	With 3 bananas	94.1	18.8	3.3	16.9	27.1	21.8	7.8	1451	119.4	27.3	22.9
	Control	93.4	20.5	13.3	21.9	27.8	21.5	22.5	1402	132.9	27.4	20.6
Lloyd and Mary 11 & 13 yrs.	With 6 bananas	94.3	9.0	1.4	20.6	31.8	20.5	9.2	1340	134.6	28.2	21.0
	Control*	94.6	21.6	7.9	22.2	25.1	20.6	16.2	1403	93.2	22.2	23.8
Jack and Gordon 8 years	With 3 bananas	93.5	8.4	14.5	21.6	29.6	39.1	24.6	1081	151.0	25.8	17.1
	Control	95.2	11.7	4.2	28.7	21.6	20.4	7.1	1133	123.0	17.8	14.5
Jack and Gordon 8 years	With 5 bananas	94.4	15.6	−0.1	12.1	14.3	11.6	1.4	1109	175.8	30.5	17.3
	Control	94.3	17.4	−0.8	19.1	2.8	19.3	1.3	1202	145.1	25.1	17.3

*Lloyd's control lost.

on the chest, at the same time having a small rise of temperature and a mildly sore throat. All these symptoms cleared up in two or three days. Some weeks later she was again given six bananas a day for a week, but no symptoms whatever developed.

As regards gross digestion, the banana, in the ripe condition as given in this study, was far better digested than some of the vegetables of the diet were during both the control and the banana-feeding periods. It was the rule to find easily apparent fragments of carrots or of beets in the fæces following the intake of those vegetables, but no banana was ever seen except slight traces in the case of three of the five and six year old children.

TABLE IV.

HYDROGEN-ION CONCENTRATION OF URINE

Name	Age Group	Number of Bananas	pH of Urine	
			With Bananas	Control
Lloyd	10 to 13 years	3 a day	6.5	6.1
Bobbie G.			6.1	5.9
Mary			6.4	5.9
Jennie			6.4	6.1
Lloyd	11 to 13 years	6 a day	7.1	6.4
Billy B.			6.7	6.4
Mary			6.75	6.0
Irene			6.95	6.5
Gordon W.	8 and 9 years	3 a day	6.5	6.4
Jack			6.8	6.5
Billy Br.			6.7	5.6
Bobby R.			6.85	6.3
Gordon W.	7 and 8 years	5 a day	6.85	6.3
Jack			7.3	6.4
Bobby B.			7.05	6.45
Betty			6.95	6.1
Ethel	5 and 6 years	3 a day	6.85	6.6
Teddy			7.25	6.9
Gordon B.			7.4	6.8
Average of all			6.8	6.3

It is seen from Table I that the intake ran slightly higher in the control than in the banana periods in fat and nitrogen, due probably to a slightly greater milk intake in the desserts for which banana was partly substituted. Possibly a little more butter also was included in the control diets, as occasionally some bread and butter had to be omitted from the banana diets to make up the carbohydrate equivalent of the bananas. There was always a higher magnesium intake with the banana-containing diets, probably because of the relatively high magnesium content of bananas. The reported mineral analyses of bananas give especially high content of magnesium, potassium and chloride. Sherman,[17] in a table of values compiled from various sources, gives 0.028 grams of magnesium (equivalent to 0.046 of magnesium oxide) in 100 grams of the edible portion of banana, considerably more than the amount in 100 c.c. of cow's milk. It might be mentioned here, incidentally, that, according to Sherman's figures, a good sized banana contains about five times as much iron as a glass of milk.

Considering the second half of Table I, it is seen that, judging digestion and assimilation from the per cent of the intake retained, there

is not much to choose between the banana-containing and the control diets, particularly as regards fat, calcium, magnesium, phosphorus and chloride. In respect to nitrogen and total salts the separate groups show somewhat greater retention in the control than in the banana-feeding periods. With fat there is no real difference; with calcium and chloride the greater retention is more often in the control periods; with magnesium and phosphorus, more often in the banana-feeding periods. Except in regard to nitrogen the differences are indecisive and insignificant. The average of the findings for the individual children, regardless of age or number of bananas taken, confirms this general estimate of the difference between the retentions in banana and in control periods. Table III shows that Lloyd and Mary had a considerably reduced nitrogen retention on the greater banana intake but not in the corresponding control period. On the other hand, Jack and Gordon showed less disadvantage in nitrogen retention, as compared with the corresponding control, when taking five bananas than when taking three. The small disadvantage generally shown in nitrogen retention in the banana feeding periods is not necessarily to be taken as conclusive. The variation between individuals, even those of a pair on the same diet, whether banana or control, was often considerable and a larger number than eighteen and twenty observations would be necessary to determine whether or not there is anything actually significant in this finding. The retentions of fat and of the separate salt components were excellent in both banana feeding and control periods. The retention values for nitrogen and total salts are lower than was to be expected on both kinds of diets, considering the weight gains shown by the children.

In Table II it is seen that the volume of urine was always somewhat less in the banana-feeding than in the control periods; also that with all but one of the groups the moist and dried weight of the fæces was slightly greater with the banana-containing diets. The total solids in percentage of moist substance, as given in Table II indicate that there was little difference in the average consistency of the stools on the banana-containing and on the control diets. These values show that the fæces on the whole were of a firm consistency. There was with all the children variation from mushy to more or less hard formed stools, never any diarrhœa on either diet. One child only, an eight year old girl, had always stools of the constipated type, of slightly moister consistency on the banana-containing than on the control diet.

In Table IV is given the average hydrogen-ion concentration of the urine for each child's four day period, determined colorimetrically in the twenty-four hours' collections. It is seen that the p^H in each case was distinctly higher with the banana-containing than with the corresponding control diet. The values from day to day for any child varied little, making the averages truly representative. That this lowered acidity in the urine is related to the banana intake is confirmed by the findings with four children who were observed in two periods, the second time with greater banana intake. Lloyd and Mary, with three bananas a day, had a urinary p^H value of 6.5 and 6.4 respectively; with six bananas a day a p^H of 7.1 and 6.75. Gordon and Jack, on three bananas daily, showed a p^H of 6.5 and 6.8 respectively; on five a day, 6.85 and 7.3. Lloyd's control period showed a slightly greater alkalinity in the second period, but not so great an increase as in the corresponding banana-feeding period, while with the three others the p^H in the second control period was lower than in the first, or unchanged. Thus, these findings indicate a definite effect of the intake of banana in decreasing urinary acidity. This observation may be of value in considering the modification of diets for children showing an acidic tendency. It may also help to explain the value of the banana in the diet in chronic intestinal indigestion.

SUMMARY

1. Children from five to thirteen years of age were studied in groups of four; two on mixed diet without bananas and two on the same diet with three to six bananas substituted for a corresponding quantity of carbohydrate. After a suitable interval the diets of the two pairs of a group were transposed.

2. Following a preliminary period on a measured food intake, representative samples of the food intake and the total urinary and fæcal output of each child were collected for a four days' period. This material was analyzed for content of fat, nitrogen, total ash, calcium, magnesium, phosphorus and chloride. The moist and dried weight of the fæces and the

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volume of the urine were noted daily; and the hydrogen-ion concentration was estimated in fresh urine and fæces. The percentage of intake retained was taken as the criterion of digestion and assimilation of the diets.

3. The average percentage of intake retained of the various components, for all the children observed, showed inconsiderable differences between the banana-feeding and the control periods. In respect to nitrogen retention the difference was somewhat greater than for the other components determined, but it is questionable whether this difference is great enough to be of any significance. The averages for the group periods showed small differences, sometimes to the advantage of the banana-containing diet, sometimes to that of the control diet, being more clearly to the advantage of the control diet in respect to nitrogen than any of the other components.

4. There was always a somewhat smaller daily volume of urine and somewhat greater output of fæces in the banana-feeding than in the control periods, but never any diarrhœa on the banana diet.

5. The urine was always distinctly more alkaline with the banana-containing than with the control diets, as shown by p^H values. This suggests that the banana may be of value for addition to diets in acidic conditions.

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STUDIES IN THE PATHOLOGY OF DIGESTION

I. INTESTINAL FERMENTATION AND PUTREFACTION

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A GREAT number of intestinal disturbances, such as dyspepsia, diarrhœa, catarrh, and intoxications often follow one another in vicious circles and are caused by intestinal fermentation and putrefaction.

While much has been written and said about intestinal fermentation and putrefaction, not many positive chemical, bacteriological, or clinical facts have been presented, and the study of intestinal fermentation and putrefaction, their origin and nature, their clinical importance, their diagnostic demonstration, and their treatment, still deserve further investigation.

I have been occupied with the study of these problems for nearly twenty years, having commenced my investigations as an interne in Professor Senator's Royal Polyclinic Institute in Berlin. In course of time I have made more than two thousand coprological examinations in digestive diseases, and consequently have had opportunity to study many aspects of this subject. Investigations were carried on to determine the nature and extent of intestinal fermentation and putrefaction in the greatest variety of intestinal diseases possible, under the influence of various forms of diet, and the results of these studies were published in 1918.[1, 2] In this article I shall summarize the practical conclusions which I think may be drawn from these and other subsequent studies.

In one part of the systematic investigations

I have tested the quantity of the fermentative and putrefactive processes in various patients suffering from intestinal diseases, under the following different types of diet which I have administered from 3 to 8 days:

(1) Liquids only; tea, water, bouillon, as fast days; (2) Milk only; (3) Schmidt test meal for testing the general digestive powers; (4) Hydrocarbonated soft diet (rice, rye, tapioca, soup, mashed potatoes, etc.); (5) Vegetarian diet: (all kind of vegetables, beets, beans, potatoes, cabbage, salads, nuts, fruits, etc.); (6) Albuminous diet in soft form (eggs, chopped meat, gelatin, brain, soups of vegetable albumins, proteose, cheese); (7) Meat and fish diet in non-dietetic assorted kinds.

The analyses through which it was attempted to determine the effect of these various forms of diet upon intestinal fermentation and putrefaction and on other intestinal processes were the following:

A. Investigation of the general characteristics of the fæces, and also, in many patients, of the urine and the blood, especially of the albumin content of the blood through refractometrical methods.

B. The measurement of the fermentation and putrefaction process. For this purpose I have used the following chemical determinations:

1. Quantitative determination of acidity and alkalinity of the fæces by volumetric and colorimetric analysis.
2. Determination of the volatile, free, and combined fatty acids by extractive and distillation methods.
3. Determination of the free and combined ammonia.
4. Determination of the total nitrogen.
5. Schmidt's test of fermentations.
6. Tests of nucleo-proteids and dissolved albumins.
7. Bacteriological examinations.
8. Special urinalysis.

The technique for these investigations may be found in my books "Clinical Coprology" (Spanish or French edition)[3] and my "Treatise on Diseases of the Pancreas."[4]

Where I found it necessary, I made an analysis of the gastric juice. In more recent times I have learned how fruitful the direct examination of the contents of the small intestine is by means of the intestinal tube of Einhorn (modified by Ganter), and especially that of Van der Reiss, who has perfected this method for the direct bacteriological and physio-pathological study of the contents of the small intestine. Our first results were supported for the most part by Roux and Goiffon,[5] and Moxo.[6]

In the present paper will be given some of the conclusions of clinical importance which have been drawn from my investigations.

THE ACIDITY AND ALKALINITY OF THE FÆCES

The determination of the acidity and alkalinity of the fæces can only be made by volumetric titrations and colorimetric tests for acid and alkali; the extraction and distillation of free and compound acids and ammonias; and estimating the H-ion concentration by the electrometric method.

The test with litmus paper (the only one which has been used in coprology) does not give us clear information about the fermentation and putrefaction processes which have taken place in the intestine. Fæces which gives a neutral test when examined with litmus paper shows itself to be strongly acid or alkaline when examined by titration and delicate indicators. The volumetric analysis with indicators determines not only the acid- and alkali-ions in the condition of electrolytic dissociation (actual acid or alkali-ions), but also the potential ions from acids or their salts which have not much power of dissociation. There are many of these acids and salts in the composition of the fæces (acetic, formic, succinic, capronic, caprilic, valerianic, etc., and their weak salts).

The greater part of the stronger acids and alkalis in the intestinal contents appear in the fæces to be mutually neutralized as salts of ammonium, magnesium, potassium, sodium, and calcium. Only the determination of these combined acids and alkalis in the fæces can give us information concerning the fermentation and putrefaction processes. But a great deal of study is still necessary before one can determine exactly all the factors which are at work in the generation of acid and alkali and in the neutralization of the intestinal contents, and in their re-absorption. It is highly probable that the abnormal, pathological, grade of acidity and alkalinity of the fæces is caused especially by the volatile fatty acids and ammonia, in consequence of fermentative and putrefactive processes.

I have always found, as have other investigators, that in highly acid fæces there are many free volatile fatty acids, and this is almost

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always proportional to the acidity. These acids are generally in the form of CnH_2nO_2. In alkaline fæces I have always found free ammonia in proportion to the alkalinity. It appears that the alkalinity of the fæces always depends on the presence of ammonia which results from the deamidization of the soluble albumins through bacterial protease.

The albumins which form the source of putrefaction, in my opinion, are chiefly albumins coming from the intestinal wall through exudations and transudations; further, albumins of the inflamed mucosa; and albumins from mucus and desquamated epithelium, etc. Bacterial proteases have not much action upon the albuminous residue of the food; usually this residue appears in the fæces in the same form as it arrives at the colon.

Copious vegetable alimentation for consecutive days always produced an increase of free volatile and compound fatty acids, as products of the bacterial fermentation of pectin, cellulose, and non-digested hydrocarbons. Persistence of this vegetarian diet leads, in diseased or sensitive intestines, to fermentative processes, very soon combined with putrefaction. The fæces in these cases has sometimes an alkaline, sometimes an acid character. The acids of fermentation produce irritation in the mucosa (experimentally demonstrated). This irritation produces an exudation of albuminous elements which favour putrefaction. The ammonia from this putrefaction, combined with the acids of fermentation, can in these cases only be determined by the analysis of the free and saturated organic salts of ammonia. The excess of fermentation products almost always causes diarrhœa. The irritant effect from the volatile and non-volatile fatty acids of fermentation, according to the studies of Le Heux,[7] is more or less from acetic, butyric, propionic, formic, isovalerianic, benzoic and succinic acids, but not from lactic acid. Neukirsch, Rona and Bokai have demonstrated the highly irritative action on the mucosa especially of nascent fermentation acids (acetic, formic, capronic; or aldehydes; alcohol, acetone, etc.) which produces an increase of the peristaltic movement of the intestine. Harzaeg, Winogradoff and Bickel have further demonstrated the toxic effect of these fermentation products. They produce languor, dizziness, headache, excitability, insomnia, etc. Roux and Goiffon[8] and Rosell[9] also have described the symptomatology caused by intoxication from fermentation processes.

Other investigators (Molks, Benedik, Ferries, Loeper and Bechan) have written concerning the effect of pathological fermentation upon the mineral losses of the organism, especially calcium salts which are eliminated by the colon in particular. Through Schlessinger it has become known that, besides the normal neutralization processes, in pathological cases the defensive response of the organism in neutralizing the excessive acidity of the intestinal contents is so intense that the loss of alkali from the body can produce alkalipenia with acidosis and ammoniuria.

In all fæces with strong fermentation processes, I have found a deficient digestion, not only of the vegetable parts of the food but also of other nourishing elements, and signs of a rapid passage through the intestine.

I think that the formation of a great quantity of volatile fatty acids in the fæces, produced by a persistent, copious, vegetable diet, without the simultaneous production of ammonia, warrants the conclusion that the intestinal mucosa is not very sensitive. But, on the contrary, in chronic tropical diarrhœas manifesting the most marked fermentative processes, I have often observed no production of putrefaction, mucus, or desquamative intestinal catarrh. In many of these cases the proctoscopic examination of the mucosa has shown a completely dry, thin mucosa, without the secretion of mucus.

A diet exclusive of meat, fish, eggs and other nitrogens produces a neutral or alkaline reaction of the fæces. Milk products, taken in small quantity and tolerated, usually produce a neutral reaction. In patients in whom milk produces diarrhœa, with acid or alkaline fæces, the bacteriological sour milk products, such as kefir and yoghurt, correct often the diarrhœa and the acidity of the fæces. Studies conducted during many years upon the physio-pathology of the digestion of milk have shown me that abnormal fermentation of the lactose is possibly the cause of milk intolerance. The beneficial action of sour milk products is the result of its lactic acid content, which regulates the gastro-pyloric reflex and excites the duodenal secretion. Also, the casein curds are not hard as in ordinary milk, and in some bacteriological

milks, such as Yoghurt and Kefir, casein is in part peptonized; therefore its passage through the intestines is slow, and it is digested much more easily than ordinary milk. Its bacteriological action and the proteasic and lipolytic enzymes of some lactic acid bacteria may contribute much to the better tolerance of these kinds of milk. Genuine milk lactic acid bacteria ferment lactose only to lactic acid. Other aphysiological intestinal fermentation bacteria produce from lactose abnormal fermentation products: acetic and valerianic acids, etc.; and various gases and aldehydes.

In many cases of intestinal catarrh ordinary milk can augment the alkalinity of the fæces due to putrefactive bacteria. I have always found highly alkaline stools in severe catarrh or inflammation of the intestine, and they can be considered as a diagnostic characteristic of this condition. Ammonia, free or combined, is always increased in these inflammatory processes. When we find the stools in constipation to be more alkaline than normal, we can deduce an inflammatory constipation; this is very important because the treatment of such cases differs from the treatment of the non-inflammatory forms. On the other hand, we may find severe inflammatory diarrhœa with soluble albumins and a strong reaction for nucleoproteids without ammonia and with a weak alkaline reaction in the stool. Here it is possible that the rapid passage of the intestinal products and contents does not provide enough time for putrefactive processes. These stools when incubated under a closed glass become strongly ammoniacal and give forth a bad odour. This may often be found in dysentery stools which have just been passed, and they very often smell like slime (so-called "sperma" smell). When they are kept for several days under conditions favourable for putrefaction, or when infrequently passed, they putrefy and smell of ammonia.

In the fæces which is passed after several days of fasting on water, tea and bouillon, a reduction in acidity is almost always found. But fasting, in the presence of intestinal catarrh, can also produce a large quantity of ammonia. This is seen especially in colitis ulcerosa, in tuberculosis, syphilis, and carcinoma of the intestine. Here are principally concerned intestinal exudations and eliminations in putrefaction. An increased amount of free volatile fatty acids and more than the normal amount of compound acids, according to Goiffon, is a sign of a slight tendency toward putrefaction.

The importance of the intestinal products to the putrefactive processes is hardly recognized, but in reality the intestine and its glands play a great part in the production of the fæcal substance. The greater quantity of fæcal matter comes from the alimentary canal, and not from the residue of food products. With a normal, easily-digested, diet, about three-quarters of the weight of the fæces comes from the wall of the intestine and one-quarter of the weight comes from the residue of the food consumed. A large part of the fæces is composed of the bodies of bacteria which, as we know, make up one-third of the weight of the dry extract of the fæces, according to the conclusion of Strassburger, who has calculated that 78 billion bacteria (99 per cent of which are dead) are eliminated daily through the fæces. The well-known experiment of Herman determines the quantity of the fæcal products which the wall of the intestine can produce. Herman has isolated a long portion of the intestine and, after thoroughly flushing its interior, has sewn up one end. The under portion communicates with the outside of the body by means of a tube. Through this tube a great quantity of fæcal matter can be caught. We can well appreciate the large quantity of the intestinal products which can come from the intestine and its glands, especially when it is irritated, when we remember its large surface. The inner surface of the intestine includes also the surface of the folds, the crypts and the villi. It has been calculated by the anatomists that its superficial area is equivalent to from twelve to fourteen square metres. In this calculation is not included the surface of the walls of the glands of Lieberkuhn, which Sappey has reckoned as 18 to 20 million in number, each gland having a depth of one-tenth to three-tenths of a millimetre. We know that the mucous epithelium which covers all its folds, villi and the walls of its glands, is in a constant process of renewal. Each cell has a short life; many of them function but once. The goblet cell (and one or two of the others) constantly produces the muco-protein, and disappears after it has functioned. With irritation or congestion the exudation and desquama-

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tion can increase to very large proportions. In view of these facts we can understand the large quantity of protein disintegration products which, especially in the presence of irritation, may arise from the intestinal wall and enter into the putrefactive process of albumins.

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THE USE OF MANGANESE CHLORIDE IN DEMENTIA PRÆCOX*

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WE at this clinic consider dementia præcox to be founded upon a congenital psychical defect, an early evidence of which is not inaptly described by a French School as "stranded on the rock of puberty." The physical basis of this disease is unknown. Hence, little faith can be placed in any drug which might conceivably be recommended as a cure. The work reported herein is based upon the general experience that the acute and progressive stages of dementia præcox are often relieved by treatment. Some clinicians have expressed the opinion that *any active* treatment is better than none; moreover, any means which aids in the immediate prevention or abortion of an acute episode is to be welcomed. Search for a rational therapeusis for the not uncommon abnormal physical characteristics of the disease led us, in the latter part of 1927, to the use of manganese chloride

The earliest reference to this salt in the treatment of the psychosis was published by Reiter and Bisgaard[1] (1927) in Denmark, whose work was inspired by the experiments of Walbum.[2] The latter, at the State Serum Institute of Denmark, found that the simple salts of heavy metals, when injected intravenously in very small doses, would consistently prevent and cure specific diseases in experimental animals. Manganese was found to be one of the most useful metals in the case of staphylococcic, paratyphoid, and Shiga-Kruse infections, and in diphtheria and tetanus intoxications. This particular metal was of little use in tuberculosis. It is interesting to note that Walbum found that it did prevent tuberculin shock. He has proved that small doses of the metals have no stimulating action on the infecting organisms and that larger doses do stimulate the pathological process; it is a reasonable deduction then, that there is an optimum dose which is not to be exceeded. He has also shown that the more complex salts are inert. The mechanism is thought to be a catalysis of the biochemical defenses of the body. Considering the marked effect of salts on protein and colloid solutions this explanation is plausible.

Reiter and Bisgaard, of Denmark, and Schrijer, of Holland, each reported fifty cases of dementia præcox treated with manganese chloride with 50 per cent of the cases improved. Stenberg, in Sweden, obtained the same results, but rightly reserved drawing definite conclusions. These investigators were unanimous in recommending three precautions: first, to avoid treating cases with active organic disease;

* From a clinic at the Verdun Protestant Hospital, under the direction of Dr. C. A. Porteous, Medical Superintendent, whose help and advice the writer gratefully acknowledges.

second, to treat each case individually in regard to the dose of the drug; third, that all patients under treatment should have duly recorded the character and quality of the pulse, temperature, and respirations. The findings aid in determining the optimum dose. Our endeavour to verify the results of these workers began over a year ago, and we are now able to report on a small carefully worked out series.

A selection of thirty cases, representing as nearly as possible all types of dementia præcox was made (see Table I). These patients were put to bed under observation for two weeks; a physical examination, urinalysis, blood count, and sedimentation test were made and a clinical record kept. The treatment was then begun and consisted in an intravenous injection of from two to eight c.c. of a 0.02 molar solution of manganese chloride. The European workers used a dose of from 0.2 to 2. c.c. of the solution. Thirty injections in all were thus given to every patient in the course of fifteen weeks. They were given 0.3 grams of manganese chloride by mouth twice a day for a month after the intravenous administration was stopped. When the drug was given by the mouth a tendency to produce catharsis was noted. We used an intravenous injection a

TABLE 1

No.	*Diagnosis*	*Age*	*Sex*	*Admission Record*	*Before Treatment Weight*	*Sed. Test*	*"R"*	*After Treatment Weight*	*Sed. Test*	*Result*
1.	G.P.I. History D.P.	40	Female	1926	111	–	–	106	—	No imp.
2.	D.P. Dement.	46	"	1912 2 former	80	–	–	106	0	Phys. imp.
3.	D.P. Dement.	24	"	1927	123	– –	–	147	0	Discharged
4.	D.P. Manic	30	"	1927	102	– –	–	108	–	Phys. imp.
5.	D.P. Paranoid	30	"	1927	102	– –	–	101	– –	No imp.
6.	D.P. Catatonic	19	"	1928	95	–	–	100	0	Phys. imp.
7.	D.P. "	44	"	1926	103	– –	–	100	– –	No imp.
8.	Melancholia precox hist.	46	"	1925	142	– –	–	153	0	Phys. imp.
9.	Depressed schizophren.	36	"	1925	111	–	–	118	–	" "
10.	Schiz. Moron	20	"	1927	90	– –	–	97	–	" "
11.	Schiz. Simple	35	"	1927	110	–	–	127	0	" "
12.	" "	31	"	1928	80	–	–	81	–	No imp.
13.	" "	19	"	1927 2nd adm.	115	–	–	98	– –	" "
14.	" "	45	"	1926 2nd adm.	91	– –	–	98	–	Phys. imp.
15.	" "	34	"	1927	99	– –	–	105	0	Discharged
16.	D.P. Hebe.	22	Male	5 former adm.	172	– –	–	160	– –	Discharged & returned
17.	" "	25	"	1926	160	0	–	160	0	Discharged
18.	" "	23	"	1927	123	0	–	135	0	"
19.	D.P. Paranoid	30	"	1925	140	– –	–	155	0	Phys. imp.
20.	D.P. Manic	20	"	1927	102	– –	0	116	– –	" "
21.	" "	34	"	3rd adm. 4 yrs.	131	– – –	–	140	–	Discharged
22.	" "	22	"	3rd adm. 3 yrs.	145	– –	–	148	– –	"
23.	" "	44	"	Once before 1927	143	– –	–	150	0	" Return and discharged
24.	D.P. Begin. Dementia	36	"	1928	125	– –	–	129	0	Phys. imp.
25.	Schiz. Simple	31	"	1927 & 2 yrs. ago	151	0	–	151	0	No imp.
26.	" "	23	"	1927	138	– –	–	144	0	Discharged returned
27.	" "	38	"	1927 & 15 yrs. ago	130	– –	–	128	– –	Discharged improved
28.	" "	21	"	1927	110	– –	–	118	0	Discharged
29.	D.P.H.	28	"	1927	137	– – – –	0	Nephritis		Recovery
30.	D.P. Catatonic	29	"	1927	130	– – – –	–	Tuberculous pneumonia		Death

D.P.—Dementia Præcox C.—Catatonic H.—Hebephrenic "R"—Reaction to Manganese

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little larger than that recommended in the hope it would produce more rapid results. The amount was determined by the appearance of a slight reaction, noted by former investigators. This consists in a transitory erythema of the face and conjunctivæ associated with a feeling of warmth, but not accompanied by any change in the pupils, blood-pressure, or pulse rate. This "reaction" was obtained by a definite individual dose in all but two patients, who then received the maximum amount each time. Half of the group received a dose sufficient to cause a "flush" or "reaction"; the other half received 2 c.c. less than the amount in their particular cases which would cause the reactions. A sedimentation test was done during and after the treatment; this is of value in estimating the optimum dose. The clinical record was stopped at the end of the treatment. The cases were reviewed one year later.

We did not find any marked variation from the normal pulse or temperature, prior to or during the treatment, which could not be accounted for by some evident condition. We did find, however, that twenty-five of the thirty cases gave accelerated sedimentation tests, and that two of these were definitely pathological. No major organic disease could be found at that time. The physical condition of all of those under treatment prior to treatment was that familiar to psychiatrists, and we might summarize it as follows. Their average age was thirty years. Despite an adequate diet they were undernourished, even when active. A hypotonic neuromuscular system was evident in all but catatonic types. An impaired tissue turgor and unstable vasomotor mechanism was common. Œdema and cyanosis of the lower extremities occurred frequently in the catatonic cases. The almost constant minor infections of the skin or mucous membranes, so frequently present, we interpret as a susceptibility to infection.

TABLE 2

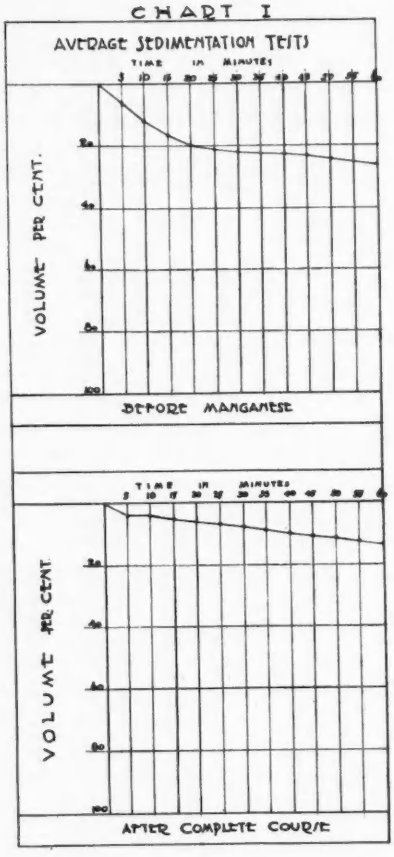
THIRTY CASES TREATED BY MANGANESE CHLORIDE

		Per Cent
"Reaction" to manganese	28	93
Rapid sed. test.	25	83
Improved sed. test	15	50
Improved physically	17	56
Improved mentally	11	36.6
Definitely worse physically	2	6.6
Definitely worse mentally	1	3.3

100 untreated cases gave 18 per cent discharged improved in the same time.

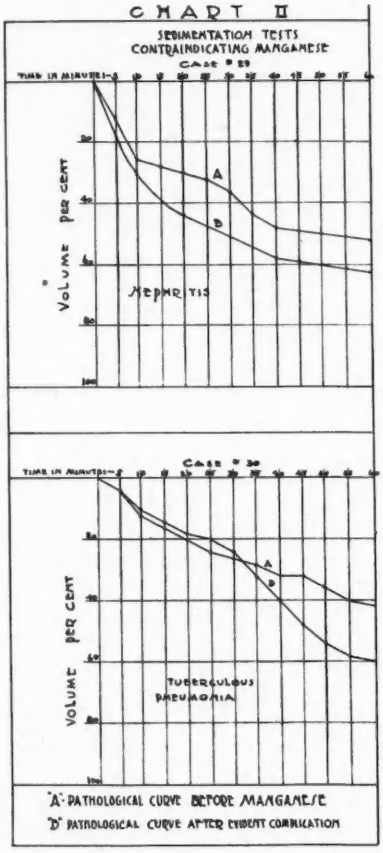
The results of the injections may be considered from many points of view, but certain facts stand out.

Considering the total number of cases we cannot duplicate the improvement percentage of the European investigators (see Table 2). However, we find that 85 per cent of our group gave an accelerated sedimentation test before



treatment. This improved in 50 per cent of cases as treatment progressed (see Chart I). Two were definitely worse physically following treatment, and these would have been excluded from the series had we then known the value of the sedimentation test (Chart II). It should be noted that all but three cases improved physically with the treatment, in that minor ailments and complaints disappeared. However, no case was recorded as improved physically unless there was a sustained gain of over five pounds in weight during treatment. No case was considered improved mentally unless

able to be discharged improved. These are, we think, very conservative criteria. It is interesting that one patient regarded as somewhat demented proved a rapid and so far stable cure: the catatonic types did not respond in any instance. Three of the eleven cases discharged returned to the hospital after some months, and after a short stay two have again gone home on trial.



We have compared the manganese treated cases with our cases in whom this therapeutic measure was not used. To avoid including chronic types we used the first one hundred admissions in 1928 with a diagnosis made by ourselves of dementia præcox. We find after one year that 18 per cent of the untreated have been discharged "improved," compared with the 36.6 per cent of cases discharged among those treated with manganese chloride.

Our clinical material should be divided into two groups of 15 men and 15 women (Table 3). A consideration of these, with the evident difference in sex, age, and dosage may help to explain (or confuse) the difference between the results. It is true that in receiving a smaller dose the male cases were treated more nearly as recommended by the original workers. It is also true that in this limited series of fifteen men we have verified the percentage of the European clinic, *viz.*, about 50 per cent. A comparison of the two groups further demonstrates that an improvement in the physical condition does not always mean mental improvement. It is to be remembered that a gain in weight in patients presenting a præcox syndrome often accompanies the onset of psychical degeneration, even when not treated by this method.

TABLE 3

Average age		30 years
Average age of discharged cases		27 years
Sex	male—15 cases;	female—15 cases
Ages	6 over 30 years	11 over 30 years
	1 over 40 years	4 over 40 years
Average dose of mang.	4.5 c.c.	7 c.c.
No. discharged improved	9	2
No. improved physically	7	10

CONCLUSIONS

1. Manganese chloride, as used above, may be expected to improve the physical condition of many patients with dementia præcox.

2. The salt is contra-indicated in larger doses than recommended, if given repeatedly. It will cause an exacerbation of physical symptoms if any major organic disease is demonstrable or even suspected. One of the essentials would appear to be that the optimum dose must not be exceeded. Hence with the present technique and dosage it should *not* be used in a routine manner.

3. The weight chart and the sedimentation tests have proved the most valuable indices of the general condition of the patient and for ascertaining the optimum dose. We have not been led to the belief that the temperature and pulse variations are of any special value in this regard, as is mentioned by Bisgaard.

4. We have observed a substantially higher discharge rate among the cases with manganese than in similar cases not receiving treatment. However, we feel that more work will be required, and is justified, to determine whether the results are real or apparent.

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THE CURABILITY OF DIABETES MELLITUS*

BY J. A. GILCHRIST, B.A., M.B.,

Toronto

THE treatment of a diabetic patient is essentially conducted by a co-operative company of eight different units. The success or failure of the treatment depends upon the success or failure of each member of this company, and the dividends paid are in the health and well being of the patient, his ability once again to take his place as a useful working member of society, and his continuing influence upon an ever expanding circle of relatives, friends, and acquaintances. The partners in this company, as they appear, are as follows:—

1. The diabetic patient.
2. The diabetic consultant.
3. The hospital dietitian.
4. The hospital nurses and housemen.
5. The laboratory technicians.
6. The social service workers.
7. The patient's family and friends.
8. The patient's family medical adviser.

These eight independent units contract together, and are mutually inter-related, to transform an invalid, a non-worker, into a well working unit of society.

The more I see of diabetic work the more convinced I am that we can not only keep the diabetic patient alive, by diet, or diet and insulin, for a normal expectation of life, but that we can cure a large percentage of our cases, and by cure I mean a return to normal diet, normal blood sugars, and an aglycosuric state; but, to achieve this, we must have the constant co-operation and interest of all of the members of this diabetic co-operative company.

Dr. Joslin[1] in his paper on ten-year diabetics, points out that in the State of Massachusetts the expectation of life of the patient who has lived for ten years under the diabetic regime, is three years longer than that of the normal individual. These figures are startling, but none the less true, and, when analyzed, bear out the fact that when an individual with a handicap learns to take care of himself he usually lives longer than his more healthy but careless neighbour. This was repeatedly demonstrated in the various influenza epidemics of recent years.

In our treatment of diabetics we are often so energetically concerned in treating the disease that we forget how unsuccessful any effort will be that fails to treat, first of all the patient, and secondly the patient's family, friends, and medical adviser, upon whom devolves the continuance of the treatment when the patient returns home. Two examples will illustrate what is meant.

One patient, of almost wealthy circumstances, who is now successfully progressing to health, deliberately stopped a former complicated diabetic regime because he could not keep a maid. The requirements of frying meats and eggs separately in mineral oil, and the necessity of altering butter and cream rations to compensate for various meats, fish and fowl, were so time-consuming and irksome that he was faced with the alternative of getting a second maid to handle his diet, or with giving up his treatment, and he chose the latter.

Another patient, a farmer, was referred with diabetic gangrene of one leg by his physician, who was sufficiently enlightened to appreciate that without a dietitian to control his diet it was impossible, in the local hospital, to successfully amputate the leg. The patient became sugar-free on diet and insulin, and a successful amputation was performed. During his convalescence, his wife came to Toronto, and soon was trained to handle his diabetic diet, and to administer insulin. On his return home, a report embodying his diet and insulin requirements was forwarded to the local medical practitioner, who had so wisely referred the case in the first place. Included in this report was a statement, that the circulation of the remaining foot was markedly impaired, and that any deviation by the patient from the path of normal blood sugars, would probably terminate in gangrene and loss of the remaining leg.

On viewing the diet list, with its bran muffins, the doctor informed the patient that these were not necessary, and that he could substitute any amount of bread, dried in the oven, in their place. A private communication from his wife advised that this had caused the return of a marked glycosuria, and the doctor was written to once, and the patient twice, warning them of what would happen. One year to the month, this patient returned with a diabetic gangrene of the other leg, which was successfully amputated, but he succumbed on the fifth day to an embolus dislodged from the site of operation.

Now let us consider for a moment the scientific side of the diet problem. The analysis of 29 samples of apples, as given by Atwater[2] in American Food Materials, shows a range

* Read at Christie Street Hospital, Department of Pensions and National Health, February 28, 1929.

from 8.8 to 21.3 per cent, and these are classed ordinarily as 15 per cent, a variation from the normal as low as 41 per cent and above as far as 44 per cent. Similarly, let us consider the protein of loin of lean beef. Here the twelve analyses show a variation of 32 per cent below and 22 per cent above the average analysis. If the individual articles of each meal could be analyzed separately, there would probably be found a working error of at least 25 per cent, but what is gained in one article of diet is lost on another, so that our average figures for a meal are probably nearly correct. From a practical standpoint the fact remains that if the patient weighs his food accurately he remains sugar free, and with blood sugars normal, despite the fact that he sails between the Scylla of glycosuria, on the one hand, and the Charybdis of hypoglycæmia on the other.

With these errors in our diets, why then should we vex ourselves and our patients with dietetic figure fractions? Why then should we not lump all the meats, fowl, fish, etc., under "meats," and not make the patient's life intolerable by insisting that when he switches from beef to lamb, and lamb to veal, he has to have different weights for each, and has to alter his butter or cream rations at each meal to compensate for the fats? And why should we insist on a separate frying of meats in vile-smelling mineral oil? Oftentimes our efforts at being scientific make the dietary régime so galling that many a patient has preferred to give up what has become an intolerable business, and pray that an unrestricted diet may soon put him out of his misery. In other words, we are so keen on treating a disease that we forget that we are treating a patient. Surely the criterion of the success of any treatment is to get the patient well, and keep him well and working. And, once again, the proof that it can be done is the fact that innumerable diabetic patients are progressing to cures, and, apart from intercurrent complications and infections, are staying sugar-free and keeping their blood sugars within normal range.

In discussing the various methods of treating diabetics, one may say "all roads lead to Rome" but some roads are more steep than others and travel needlessly over many barren hillsides, while some lie along the more pleasant verdure scattered valleys.

With regard to carbohydrate, it is better to give a patient 100 grm. of carbohydrate in his diet, if he will stick to it, than to give him a diet of 40 or 50 grm. to which he will not adhere.

Scientifically, two-thirds of a gram of protein per kilogram of body weight may be sufficient for the replacement of the body-tissue of a patient in hospital, but if he is to lead an active life, and have any joy in the living of it, he requires a gram of protein per kilogram of body weight.

With regard to fat, many a patient who has nothing wrong with his gall bladder, cannot tolerate more than 170 grm. of fat daily for 365 days in the year without getting nauseated, losing his appetite, and developing an oily skin, with acne eruptions. The argument in favour of fats is the low available carbohydrate content of 10 per cent. More recent work will probably show that much higher values than 10 per cent must be utilizable by the human metabolism. Furthermore, in a series[3] of more than two hundred diabetic patients, it was discovered that 57 per cent of these had, as a complication and probable etiological factor for their diabetes, gall bladder disease, with or without gall stones. Why then should we give half of our diabetics indigestion and bilious attacks and produce vomiting and acidosis from high fat diets?

Dr. Joslin, of Boston, states that of his ten-year diabetics only 15 per cent are free from atheromatous changes associated with arteriosclerosis. This, he holds, is due to high fat feeding, the laying down of fat in the media of the vessel wall, and later, the formation of atheroma. I do not doubt his figures, for when I was in Boston, the happy guest of the New England Deaconess Hospital, he had trained assistants going over his histories in a very exacting and scientific survey. I doubt his interpretation, however, because at the date of his paper, insulin had only been with us for six years and generally available for only five, and his younger, and consequently more severe, diabetics, had died. The milder cases, those of more mature years, are those who were more likely to survive a ten-year period of observation, and are just the ones in whom one would naturally look for arteriosclerosis. With the passing of each year, I venture to predict that

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the lowly 15 per cent will mount rapidly, as each younger patient, saved by insulin, attains to his tenth diabetic anniversary.

I think that all but very mild cases should weigh their food and keep weighing it. Patients say they can guess the weight, after weighing for a while, and so they can, but after a lapse of a month or two months of non-weighing, their ideas of food weights will be distinctly hazy.

My thanks are due to Miss C. Hazlett and Miss B. W. Monaghan for the simplified diet forms which are here illustrated.

DEPARTMENT OF PENSIONS AND NATIONAL HEALTH

For

Reg. No. Date

Food	Breakfast	Dinner	Supper	Total Grams	Carbohydrate	Protein	Fat
5% veg. cooked	....	....	....	....	....	....	....
10% fruit	....	....	....	....	....	....	....
Oatmeal	....	....	....	....	....	....	....
Corn flakes ...	....	....	....	....	....	....	....
Shredded wheat	....	....	....	....	....	....	....
Muffin	....	....	....	....	....	....	....
Cream	....	....	....	....	....	....	....
Eggs	....	....	....	....	....	....	....
Bacon	....	....	....	....	....	....	....
Meat	....	....	....	....	....	....	....
Cheese	....	....	....	....	....	....	....
Butter	....	....	....	....	....	....	....
Insulin	....	....	....	Grams	....	....	....
.....	....	....	....	Calories	4	4	9
Total Calories.....					—	—	—

These forms are arranged so that the patient can easily follow, in reading from meals to items of diet. They are made up for the patient, but for the dietitians follow chronologically each step as the diet is made. First of all, there are carbohydrate containing foods, then the protein foods, and lastly the fatty foods. The total of each is reckoned, and lastly the food values and calories are entered. A space is left opposite each meal for insulin dosage.

All the vegetables are prescribed as 5 per cent, and the patient is taught how to take half the weight when changing to 10 per cent vegetables. Similarly, the fruits are all given as 10 per cent fruit, and the patient is instructed how to alter to 5, 15 or 20 per cent fruits. On the reverse side is a list of 5, 10, 15, and 20 per cent vegetables and fruits, and above each column is a space for the dietitian to enter the corresponding values of each. This saves the patients any unnecessary, or bewildering division or multiplication. They have then only to find on the list the vegetable or fruit desired, and the amount allowed is already worked out for them. The articles on the diet list are the fundamentals, and the patient is shown how to combine cream and vegetable for soup, or egg and cream for custard, or fruit and cream for ice cream. It will simplify the work if the patient has his own cream pitcher

Approximate Carbohydrate Content of Vegetables and Fruits

5 Per Cent	10 Per Cent	15 Per Cent	20 Per Cent	Non-Nutrients
Vegetables gms. Fruit gms.	Vegetables gms. Fruit gms.	Vegetables gms. Fruit gms.	Vegetables gms. Fruit gms.	
Asparagus	Beets	Artichokes	Beans, Lima, dried	Clear broth
Beans, string	Carrots	Parsnips	Beans, white	Clear tea
Beet greens	Kohl rabi	Peas, green, fresh	Beans, baked	Clear Coffee
Broccoli	Onions	Beans, Lima, canned	Corn, green	Cocoa shells
Brussels sprouts	Peas, canned		Macaroni, boiled	or
Cabbage	Pumpkin		Potato	Cracked cocoa
Cauliflower	Squash		Rice, boiled	Salt and pepper
Celery	Turnips			Vinegar
Cucumbers				Mustard
Dandelion greens		Fruits		Spices
Egg plant		Apples		Agar agar
Endive		Apricots, fresh		Mineral oil
Leeks		Bananas	Fruits	Irish Moss
Lettuce		Blueberries	Plums	Cellu Flour
Marrow		Cherries		Saccharine
Mushrooms	Fruits	Currants, fresh		Washed bran
Peppers, green		Huckleberries		Lister low
Radishes	Blackberries	Pears		calory flour
Rhubarb	Cranberries	Raspberries		Mineral oil
Sauerkraut	Gooseberries			mayonnaise
Sea Kale	Lemons			
Spinach	Muskmelon		English walnuts	
Sorrel	Oranges		Almonds	
Swiss chard	Peaches			
Tomatoes	Pineapple			
Water cress	Strawberries	Hickory nuts		
	Watermelon	Black walnuts		
Grape fruit	Olives, green	Filberts		
Ripe olives (20% fat)	(20% fat)	Beechnuts	25 Per Cent	
Butternuts	Brazil nuts	Pecans	Peanuts	

and butter dish, and weighs out his whole day's ration of these articles at breakfast, and apportions them approximately at each meal during the day.

In the Department of Pensions and National Health we are now using as bread substitutes, various muffins made from Tillson's unwashed bran, recipes for which may be procured by writing to Miss C. Hazlett at this hospital. One package of bran, costing twenty cents, constitutes approximately a month's supply, and avoids the high protein and high cost values of Lister's, diaprotein and Allenbury flours, and also the unsettled problem of the utilization of the carbohydrate of soya bean. These muffins are a palatable vehicle for butter, and from the patient's standpoint, much to be prized above Cellu or washed bran biscuit.

Our more intelligent patients, who can understand food value figures, are permitted to use more complicated desserts, but for the most part, the diet is carried out as it appears on these simplified diet forms.

Let us now go one step farther than the treatment of the disease, which is comparatively simple. If we are ever to cure the disease, we must know the cause. The etiological factors are varied, but easily discoverable if we but search diligently. More than one cause may be present in the same patient. Having diagnosed the cause, and having treated it, as well as the disease, can we be accused of being too optimistic for thinking that a large number of our cases can be cured, particularly those who come early and become sugar-free before permanent damage is done to the islet cells of Langerhans?

The etiological factors of diabetes mellitus are as follows: a hereditary defect of the pancreatic islet tissue; arterio-sclerosis; endocrine gland disturbance; dietary excesses and obesity; cranial injuries; focal infection.

There is undoubtedly a familial, as well as a conjugal incidence of diabetes. This may be due to a hereditary factor or defect, but probably is due to the similar mode of living and eating of various members of the same family. We all know of families who eat extraordinary amounts of carbohydrate, whose members are all overweight, and who exercise inadequately. This fact, combined with the facilities for contracting the same infections, is the probable explanation of the majority of these familial cases of diabetes rather than a hereditary tendency. A large number of the patients who have been under the care of this Department since the discovery of insulin in 1922 now have families, and in no instance has it been discovered that the second generation has developed this disease. A defect of pancreatic islet tissue is a possibility, but a very rare and minor factor in the etiology of diabetes mellitus.

Arteriosclerosis is undoubtedly a large factor in the older diabetic, and here the disease is insidious in onset, but usually of mild degree and easily controlled by diet without the use of insulin. Associated with the arteriosclerosis is often some impairment of kidney function, and when this has been determined and corrected the patients can readily carry on with very little disability. This type, however, in view of the permanency of the atheromatous changes, is not as likely to give rise to a great percentage of cures, and carelessness on the patient's part with regard to diet usually terminates, not in diabetic coma, but in diabetic gangrene and infection. A word of warning about the elderly diabetic may not here be out of place. With kidney function impaired, the renal threshold for glucose is often quite elevated, and trusting to urinary samples which are sugar free, may lead one into a false sense of security. Blood sugars are most important in this type of case. Another warning to be heeded in elderly diabetics, is not to lower the blood sugar too far or too fast, or you may lose your patient with an anginal attack, probably due to the fact that his heart muscle receives an insufficient supply of glucose.

As our knowledge of the endocrine glands has grown we have learned of their inter-relationship. As safety valves upon insulin activity we have the secretions of the thyroid and suprarenal glands. Hence the necessity arises for the routine examination for the basal metabolic rate in all diabetic patients. By so doing, we eliminate the chance of overlooking a mild hyperthyroid condition. The severe hyperthyroid case with diabetes, while giving a sensational recovery from both diseases under surgical means, is an extremely worrying and dangerous patient, for thyroid storm and hypo-

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glycæmia, associated with myocardial degeneration, can easily produce a fatal termination.

We are still hoping for an adequate and reliable test for adrenal function. Those available at present are dependent upon so many variable factors that their reliability is open to grave doubt. Undoubtedly, the suprarenal gland is a safety valve upon carbohydrate metabolism, as evidenced by the hyperglycæmic rise of the blood following the injection of adrenalin, and the pupillary dilation caused by the sympathetic stimulation in marked hypoglycæmia.

The pituitary gland also exercises a controlling hand upon sugar metabolism.[4] In hypopituitarism there is increased sugar tolerance; in hyperpituitarism there is a decreased sugar tolerance with increased urinary output.

Dietary excesses, and consequent obesity, are often a precursor of diabetes mellitus. Between 1 and 2 per cent of the American population are afflicted with this disease, and this undoubtedly is due to the fact that the per capita consumption of sugar in the United States in pre-Volstead days was five times greater than that of Great Britain, and greater still since the passing of the Volstead Act. The incidence of diabetes among overweight people is immeasurably greater than among people who are of normal weight or under.

The greater use of motor cars, which provide fresh air and keen appetites, without the necessity of physical exercise, is also a big contributing cause for obesity, and later, either arteriosclerosis or diabetes, or both. One has only to gaze in awe and wonder at the prodigious meals consumed by our summer motorists to cease to wonder that only 1 or 2 per cent of them have a true glycosuria. This type of diabetes is usually mild, and, with proper weight reduction, and dietary supervision, the patient soon regains a normal carbohydrate tolerance.

Cranial injuries, with possible damage to the floor of the fourth ventricle, are another etiological cause of diabetes, but unless the injury is severe and the glycosuria untreated, persons so affected readily regain a normal tolerance for glucose.

Disease or injury of the pancreas may also produce a true glycosuria, but this is uncommon owing to the reserve of islet tissue of this gland. Massive slough of the body of the pancreas, following hæmorrhagic pancreatitis, is rarely associated with glycosuria. Allen[4] has demonstrated the fact on animals that no diabetes is produced with the removal of three-quarters of this gland, or even as much as seven-eighths.

One of the largest etiological factors in the production of diabetes is focal infection. This must be searched for in teeth, tonsils, accessory sinuses, genito-urinary tract, and digestive system. This is particularly true of the younger adult and children. English investigators, namely, Laurence,[5] Buckley,[6] Evans and Zeckwer,[7] published in the last two years the results of their investigations on the effect of focal infections and toxæmias on carbohydrate metabolism. They found that these agents stimulated the thyroid and suprarenal glands, and their over-activity made diabetes worse and prevented the usual action of insulin. Control work on non-diabetic human beings brought out the fact that carbohydrate metabolism was also lowered by these same toxic and infective agents. Their work has given us a physiological explanation of the well known clinical fact that insulin, both endogenous and exogenous, is more or less inactive in the presence of infection. Furthermore, this effect is present in non-diabetic animals and human beings.

In a series of over 200 cases compiled from our Diabetic Clinic in this Department, private practice, and the Toronto Western Hospital, 57 per cent were found, on test by cholecystography, to have cholecystitis or cholelithiasis. This is considerably more than one would expect, for Dr. W. H. Dickson, of the Toronto General Hospital, has found only 33 per cent of diseased gall bladders in a series of 4000 cases referred for radiological examination because of some gastro-intestinal symptoms. Furthermore, about 10 per cent of these cases, with cholecystitis, had no history or clinical evidence of this focal infection. Hence the necessity for routine tests by cholecystography in all diabetic cases.

The proper treatment of the diabetic with a complication of biliary tract infection depends to a large extent upon progression or retrogression of his diabetic condition. The use of pepsin and bile salt tablets, which are avail-

able for use in this Department, has produced marked improvement in some cases, as evidenced by their increased carbohydrate tolerance and improvement in their cholecystographic picture. In spite of the pepsin and bile salt treatment, other cases show decreasing tolerance, and these, I feel, would be better with cholecystectomy, followed by a prolonged course of bile salt treatment to eradicate the residual biliary tract infection.

The following two case reports will serve to demonstrate what can be done by treating the etiological factor as well as the disease.

CASE 1

Case 1 came under observation in January, 1927, with a history of polyuria, polydipsia and polyphagia, of two months' duration, and a loss of twelve pounds during that period of time. His age was sixty years, height seventy-one inches, weight 254 pounds. His normal weight was 175 pounds. The twenty-four hour urinalysis was as follows: volume 3,240 cubic centimetres; acetone 3 plus; albumin negative; sugar 8.5 per cent, (275 grm.). He gave a history of being jaundiced as a child. Blood pressure was 185 systolic, 110 diastolic. He became aglycosuric on a diet of carbohydrate 68, protein 84, fats 150, without the use of insulin. The etiological factors in this case were obesity, chronic cholecystitis (confirmed by radiological methods), and slight arteriosclerosis with hypertension. In just two years' time, using only diet and papain and bile salt tablets, and with careful cooperation of the patient with regard to weighing of his food, the patient is now handling a diet of carbohydrate 240, protein, 92, fats 150, and is constantly aglycosuric and with normal blood sugars. His weight has been reduced to 215 pounds, and his blood pressure to 140 mm. systolic, and 80 mm. diastolic. This patient is now doing twice as much work as formerly, as executive head of one of our large business concerns.

CASE 2

Case 2 was a lad of sixteen years, who was admitted to the public wards of the Toronto Western Hospital in September, 1927, for tonsillectomy. It was found that he had a glycosuria of the true diabetic type, and he became sugar free and with normal blood sugars on a diet of carbohydrate 125, protein 60, fats 125, without the necessity of insulin. Tonsillectomy and submucous resection were performed, and during his uneventful convalescence, it was discovered by intravenous iodekon cholecystography that he had as a second infective etiological factor, chronic cholecystitis. He, too, has been a most co-operative patient, and with the use of papain and bile-salt tablets, and the eradication of his upper respiratory tract infection, has, in one year and a half, returned to a diet of carbohydrate 240, protein 70, fats 120. A re-check of his gall bladder, using iodekon orally, has shown a greater concentration of this salt than on the previous examination, although the radiographic picture is not yet quite up to normal.

These case histories are but typical of the progress that nearly all co-operative diabetics are making when the etiological factor of their diabetes mellitus is treated, as well as the disease. If we bear in mind the physiological reserve of 75 per cent of this gland, and the microscopic as well as clinical evidence of regeneration of the pancreas, can we be accused of being too optimistic when we hope that we are on the threshold of an era when we can cure a large percentage of our patients suffering from this disease?

Furthermore, in our non-diabetic patients, if we diagnose early and treat their arteriosclerosis, correct the mal-functioning of the ductless glands, particularly hyperthyroidism, eliminate obesity and over-eating, ease the mental strain of the over-ambitious, and eradicate all focal infection, then surely we can also hope to prevent the onset of diabetes, and instead of a steadily increasing incidence of this disease, we shall find a progressive diminution.

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THOSE WHO ATTEND CONFINEMENTS. — Midwives chiefly attend people who are unable to afford to engage a doctor as well, and I can think of no one more suitable to attend a *normal* confinement than a fully qualified competent midwife. In quite a large number of cases she is actually on the spot before the patient has started labour. Once labour has started she is able to give up the whole of her time to her patient until the labour is finished, and she is in constant attendance on her patient for the first ten days of the puerperium. To prevent her doing more than to "wait and see" she is only allowed to take with her to a confinement an appliance for giving a vaginal douche, an appliance for giving an enema, a pair of scissors, a clinical thermometer, and a nailbrush; and the moment she finds herself in any difficulty she is expected—nay, even compelled—to send for medical assistance.—*Brit. M. J.*, May 11, 1929.

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SPONTANEOUS PNEUMOTHORAX*

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IT will be the attempt of this article to consider the phenomenon of spontaneous pneumothorax with particular regard to the symptomatology, and to deal also to some extent with the treatment and immediate results.

In approaching the subject by reviewing the literature on pneumothorax, both artificial and accidental, one is forcibly reminded of the words of the Preacher in Ecclesiastes: "Of the making of many books there is no end, and much study is a weariness of the flesh." Although this statement is incontrovertible, and although it is becoming more and more true from day to day, nevertheless the writer will attempt to put before you certain points pertaining to the subject of spontaneous pneumothorax which if mentioned in the literature are certainly not stressed.

There are two kinds of pneumothorax, the *artificial*, of which there is frequent mention in the literature; and the *accidental* or *spontaneous* which is spoken of very little. We may divide spontaneous pneumothorax into three varieties: that occurring with demonstrable tuberculosis, where artificial pneumothorax does not enter into it; that occurring with or complicating artificial pneumothorax; and the spontaneous collapse of the lung in which there is no evidence of tuberculosis.

That we may come as quickly as possible to the pith of the matter, a typical case of each variety will be first presented, with a summary of the symptoms, after which, in order, the type itself will be discussed in a few words.

CASE 1

A large spontaneous pneumothorax occurring in a case of far advanced tuberculosis with cavity formation.

Mrs. Clara B., aged 27, had been weak and poorly since the influenza epidemic of 1918, and, from her symptoms, definitely tuberculous for three years previous to this accident. At that time the left lung contained a moderate amount of disease only, but the right already harboured three cavities, the largest of which, near the apex, occupied a quarter of the available space on that side. In addition the patient had a tuberculous laryngitis. Her temperature was usually 100 degrees in the afternoon and the pulse rate was about 85. She was confined strictly to bed.

On December 6, 1927, she complained of a pain in the right shoulder, and later of quite severe pain on the same side of the thorax. At 3 p.m. the temperature was 103.5 degrees and the pulse 130. A mustard plaster gave but little relief.

The next day the temperature reached 104.8 degrees and the pulse 145. The cough became very troublesome and suggested pleural irritation. Examination revealed no change and the chest was strapped with adhesive plaster. Through the night, shortness of breath became very marked and the patient did not sleep. In the morning (December 8th) it was found that over the right side the breath sounds were practically absent and that the heart was displaced to the left. The patient complained of a great shortness of breath, of a choking sensation in the throat below the larynx, and of difficulty in swallowing. She was very tired from persistent coughing and lack of sleep, and she was sweating profusely. The facies betokened exhaustion and extreme anxiety. The temperature had now reached 104 degrees and the pulse 140. We put a needle in the chest and found a pressure of plus 20 plus 40 m.m. of water. (These and further readings are from one limb of the Robinson manometer only, and have not been doubled). After taking off 700 c.c. of air with marked relief of the dyspnœa the readings were minus 20 minus 40. Although codein, heroin, and a quarter-grain of morphine had all been tried we were unable to quiet the cough or to procure more than a few minutes' sleep.

December 9th found the patient's breathing as embarrassed as before, with the addition of some odd sensations at the back of the mouth, where we saw on inspection that the left pillar and arch of the palate was drawn upward and laterally. Recourse to the needle gave pressures of plus 30 plus 60. We withdrew 700 c.c. of air and the pressure was left at minus 10 minus 30. The temperature was 99.8 to 102.5 degrees, and the pulse 110 to 120, whilst the sputum had decreased from four to two and one-half ounces.

On the morning of December 10th, with thoracentesis, a thin, sticky, yellow fluid made its appearance, of which we withdrew 280 c.c. and later in the day 600 c.c. of air; pressures being plus 25 plus 35 and minus 25 minus 5. Chloral hydrate, 15 grains, repeated once, gave some little rest at night. Another 900 c.c. of air were withdrawn on December 13th, in two punctures, both made above the fluid level.

On December 17th, 330 c.c. of air and 125 c.c. of fluid were removed, with poor readings due to the occlusion of the needle by fluid.

After December 19th the temperature went no further than 101 degrees, and the pulse did not exceed 120. The dyspnœa had decreased a good deal and the cough became less, so that the patient obtained some sleep. It is this dyspnœa, or rather the CO_2 content of the blood resulting from it, which makes sleep impossible and so

* This paper is based upon cases studied at the Jordan Memorial Sanatorium, Riverglade, N.B.

long as there is a great shortness of breath insomnia persists.

The acute symptoms now subsided and two months later we found the patient as follows. Cough and sputum were again slightly increased; there was pain on both sides of the chest and also in the upper abdomen; all to a large extent due to pressure, for we had not removed the fluid since December 17th (written in February, 1928). The appetite was slightly better and sweats were less bothersome.

The physical signs and symptoms of this patient may be thus summarized. Pain in the shoulder; pain in the chest (severe); dyspnœa, increasing gradually; temperature, elevated to 104.5 degrees; pulse, elevated to 140; cough, very troublesome and later decreased; sputum, decreased from 4 to 2½ ounces; sweating, profuse; anxiety, acute; insomnia; dysphagia; paralysis of a nerve, with result seen in fauces; choking sensation; pain in the opposite side of the chest, along the line of the mediastinum; rapid onset of fluid; ball or flap valve fistula.

With the review of Mrs. B.'s characteristic history we shall also discuss the findings associated with a large spontaneous pneumothorax of this, our first, type.

There is no means of definitely gauging the frequency with which large spontaneous pneumothoraces occur. E. W. Hayes[1] quotes Morris as saying that spontaneous pneumothorax occurs in 1 to 13 per cent of tuberculous cases as a whole, whilst Matson and Bisaillon[2] believe that 1 to 3 per cent of artificial pneumothoraces develop a spontaneous form. Thus we believe that our bête-noir will make its appearance in 1 to 10 per cent of plain tuberculous cases, and the larger varieties, being more frequently diagnosed, must be nearer one than three per hundred.

In our patient we found the pain in the chest situated, as is usually the case, on the lateral aspect of the thorax and not localized to one spot. It was severe, indeed, but not so intense as the pain of renal or ureteric calculus. Her pain was sharp, and sometimes of a tearing character. It was associated with pain or distress in the same shoulder and did not last in its initial severity throughout the attack.

The dyspnœa was not sudden but gradual, and was fairly rapid, which is not atypical. The ball-valve nature of the fistula made it the outstanding symptom, for she soon proceeded to smother herself with air. Such patients become frightened, and having once obtained relief would have you withdraw air every little while.

Those patients in whom the temperature and pulse soar are well illustrated by this case where the temperature rose to 104.5 degrees and the pulse to 140, though we doubt the advisability of giving digitalis in this time of cardiac stress.

The cough is always the same; it is short, sharp and persistent—the cough of pleural irritation. When pressure is such as to displace the main bronchi, coughing may become paroxysmal in character. After the severity of the accident is over the patient will cough much less than before the break occurred, but the diminution may not last if the disease again resumes its stride.

Once the residual sputum has been expectorated consequent to spontaneous compression it becomes markedly diminished. In our patient the output dropped from four to two and one-half ounces. Further changes depend upon the progress of the disease.

Every large spontaneous pneumothorax, and many smaller ones produce a symptom about which the literature makes little mention. That symptom is sweating and in the type of which we write it is constant. Anxiety, as evidenced by the facies, is always present and is in proportion to the severity of the pain and the amount of dyspnœa. It is at its height where the ball-valve fistula prevails and at the moment when, air having been withdrawn, the dyspnœa again closes in. At such a juncture only, perhaps, do our patients really envisage death.

The pain at the first, the persistent cough, and the discomfort of being short of breath do not in themselves make sleep unobtainable. It is the mounting stimulation of the higher centres with CO_2 (consequent to the dyspnœa) which we cannot hope to overcome with any drug, which produces insomnia in the bad cases. Pain we can ease, but sleep we cannot give until nature removes her stimulant.

Of the symptoms caused by pressure, pain in the contra-lateral side following the line of the displaced mediastinum is the commonest, and indeed it is seen in most cases of even small artificial pneumothorax. A choking sensation in the throat is another hall-mark of large spontaneous pneumothorax which is not given

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prominence in the literature. It is felt near the spot where the trachea enters the chest and becomes distorted. Dysphagia, although not apt to be complete, should also be a common pressure-symptom and deserves mention, were it only for the disturbing effect which it has on the patient.

So far as the writer has been able to ascertain, in a review of the American periodicals from 1917 to 1927, the following symptoms are either not mentioned, or are barely spoken of by only one or two writers. These are: the sweating, the facies of anxiety, the insomnia (and its cause), the choking sensation, and the paralysis of nerves as met with in our patient, considered above. The ball-valve type of fistula, and the usual rapid onset of fluid, are frequently mentioned, particularly with regard to treatment and prognosis.

It is well, if possible, to leave the fluid which forms, in the hope that it will facilitate the closure of the valve, and also because withdrawal stimulates its formation, with the consequent increase of pressure. The more frequently one interferes, the greater are the chances of infection.

The prognosis of these cases is well gone into in the literature, with the exception of figures. Ball-valve fistulæ are as apt to re-open in six weeks as in six days.

Treatment consists in the exhibition of narcotics and sedatives to allay the cough and to procure sleep when the dyspnœa allows it. Air must be withdrawn in many cases to avert death, and in the case of our patient referred to the respirations would reach 36 before we interfered. Some fluid may have to be removed at first for the same reason. No attempt should be made to remove it all. Later on, it is best to leave the fluid severely alone, for here "expectant treatment" will not lose us a patient but may be the means of saving one, for a time at least and possibly for a considerable time.

CASE 2

Case 2 illustrates the small type of spontaneous pneumothorax, occurring in pulmonary tuberculosis.

Mrs. De G., aged 24, who had previously seemed to do very well, so far as weight and appearances were concerned, had a bilateral non-clearing and far advanced type of tuberculosis, with râles from apex to base on both sides. Five months ago she became homesick and left us.

She returned during the winter feeling fairly well, but having lost 20 lbs. in weight. Examination showed less moisture on the left side at both the top and the bottom, and a diminution of the breath sounds over the same areas.

The x-ray plate demonstrated two areas of spontaneous pneumothorax on the left side, one toward the apex and the other at the base, and very likely they communicated with each other.

The patient, who had bathroom privileges, had been pretty well while at home but for a little setback in November, which she thought was a touch of pleurisy and a cold. She was worried about her loss of weight and thus sought re-admission. After close questioning, the "pleurisy," or "cold," as she believed it to be, was, simply, as follows: She had a fairly severe pain in the left side of the chest, for about half a day; there was some dyspnœa and a few chills; the temperature went up to 101 degrees and the pulse to over 100. With this, there had been some increase in cough and sputum to 2 oz. daily, which is never much with her, although she may swallow sputum.

The attack as we have described it lasted about two weeks and was not severe enough to cause the patient a great deal of worry. There was apparently no sweating, insomnia or marked shortness of breath with this collapse.

So far the results are a loss of 20 lbs. in weight, and the fact that the patient does not feel quite so well as before.

The signs and symptoms may be summarized thus: pain, fairly severe but short lived; dyspnœa, sufficient to be noticeable; chills, in place of sweating; elevation of temperature to 101 degrees; elevation of pulse to 100; cough and sputum increased at the time.

CASE 3

Mr. A. W., aged 36. At the time of his accident in November, 1926, this patient had an acute disease involving the upper lobes on both sides. He was running a high temperature, from 99 to 103 degrees, and the pulse went to 100. There were as many as three sweats every night, the cough was very bothersome, and the sputum raised was from three to four ounces in the twenty-four hours. In addition the man had anorexia, malaise, general weakness and loss of sleep.

One afternoon he was seized with a bad paroxysm of coughing. This was associated with profuse sweating and some shortness of breath. The temperature at the same time fell to 95.8 degrees and the pulse to 60. The patient does not remember much of what happened during the next 24 to 48 hours, for he slept a great deal, doubtless from sheer exhaustion. After this the cough became greatly lessened, in fact it practically disappeared, and the sputum decreased to half an ounce daily.

The explanation is that at this time a spontaneous pneumothorax occurred on the right side, of 15 per cent. No air was withdrawn. Fluid did not form, and within four months the air had re-absorbed. The patient has done very well since and has had but few further elevations in pulse or temperature.

Briefly his symptoms were: a paroxysm of coughing; sweating, most profuse; slight dyspnœa; temperature dropping to subnormal; pulse dropping to 60; excessive fatigue, causing

prolonged sleep; ultimate lessening of cough and sputum.

The two preceding cases do not perhaps seem good examples of spontaneous collapse of the lung, and yet for that very reason they are presented as typical of the small accidental pneumothorax, for this class differs only from the large "natural" pneumothorax in its incompleteness, both as to symptoms and extent of compression.

Considering first the pain, we find that it is either slight, as was that of Case 2, or absent, as in Case 3. If there is any appreciable collapse dyspnœa is to be expected. The reverse is also true and neither of these patients had pronounced shortness of breath.

The occurrence of sweating is usual, although Case 2 did not complain of it. Moreover, chills are not an uncommon symptom and are frequently followed by sweating. The effect upon the body heat of a small spontaneous pneumothorax is similar to that of a large one. The temperature of Case 2 rose to 101 degrees and her pulse rate increased to 100, but the rise is not so great as seen in Case 1, who had a much greater shock. On the other hand, from time to time we encounter drops in temperature to subnormal, associated with a slow pulse, and Case 3 is an instance of this.

Both our patients showed the sudden increase in cough at the time, followed by a diminution of cough and sputum. Natural pneumothorax is frequently heralded by a paroxysm of coughing, of which Mr. A. W. and Mr. J., to be spoken of later, are examples. It is understood with regard to the sputum that the expressed sputum must first come away before we see the lessened expectoration, which with improvement persists.

The smallness of this type of pneumothorax precludes the graver pressure symptoms such as choking sensations, dysphagia, and insomnia. In fact the tiredness after such a shock often induces sleep. The facies will not express acute anxiety, but worry is never absent. If one is familiar with the patient, the physical findings, besides a slight lack of resonance and diminution in breath sounds, will show fewer or more distant râles, if there was moisture before, over some portion of the affected side. In eliminating the presence of cavity, should one be seeing such a case for the first time, it will be found that the patient's symptoms are not commensurate with the size of the supposed cavitation. The frequency of this type *per se* is not, to my knowledge, set forth in the literature, although some interesting x-ray articles occur which speak of the differential diagnoses between small natural pneumothoraces and large outlying cavities. It must certainly occupy a smaller place in our minds with regard to frequency than it might, would "the giftie gie us" unerring knowledge of each small spontaneous pneumothorax.

Nearly all of these patients take care of themselves and the conversion of such cases to artificial pneumothorax will but increase the risk of forming fluid. The progress of the tuberculous patient who sustains a small spontaneous pneumothorax may indeed be poor, but, what is more often the case, is apt to be good and the collapse proves of real benefit.

The following is a case of spontaneous pneumothorax complicating artificial pneumothorax, and illustrates our second type.

CASE 4

Mr. L. S., aged 21, had in 1921 a right-sided disease involving the two upper lobes; and in the middle lobe there existed a cavity the size of an egg. He was taking artificial pneumothorax. In 1920 fluid appeared which was frequently withdrawn; it later became purulent and finally showed tubercle bacilli. The following year a needle-track fistula developed, but with the use of acriflavine to replace some of the pus, and of iodine left in the tissues of the chest wall, this fistula healed up; 400 to 1000 c.c. of pus were being removed at monthly intervals and replaced by air.

On December 14th, 1925, the patient spat up a small amount of yellow stained "fluid". There was a rise in temperature and some pain, but no marked pain in the chest. The suspicion of bronchial fistula was confirmed on December 24th, when a considerable amount of acriflavine-stained purulent sputum was expectorated, containing a few tubercle bacilli, (Gaffky I).

The temperature chart of Mr. S. at this time shows that from December 4th to December 8th the temperature rose from 98.6 degrees to 101.5 degrees, and the pulse from 85 became 105. On the ninth and tenth the temperature came down to 100 degrees and the pulse to 95; the next day 50 c.c. of air were withdrawn. The fever now ran as high as 99 degrees until the 24th when it reached 100 degrees; pulse, 105. On Christmas day the patient was transferred to the care of a surgeon.

The symptoms in this case were not very dramatic; merely a slight pain in the side, increase of cough, and expectoration of purulent sputum, and an elevation of temperature to 101 degrees and of pulse to 105.

A first stage thoracoplasty, involving the first to the eighth ribs was performed. The old year closed with a pleurisy and a root spread on the left side. This side improved sufficiently during 1926 to enable a second stage thoracoplasty to be done the following December, in which sections of the eighth to the eleventh ribs were removed.

The patient, despite some disease on the left side, weighs 196 lbs. He still brings up pus or as he calls it

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fluid, from his right side, from time to time and we are reluctantly contemplating the insertion of a permanent drainage tube to enable the fistula to close. The temperature runs about 98.6 to 99 degrees, but with distressing bouts of 100°, of which we hope to relieve him by the insertion of the tube.

The frequency with which spontaneous pneumothorax supervenes upon artificial pneumothorax has been estimated by Swezey and Schonbar[3] in a series of 205 cases, as 3.3 per cent, with a resulting mortality of 62 per cent. The 38 per cent remained unimproved, but we must remember that these 205 cases were for the most part far advanced. On the other hand, while Matson and Bisaillon,[4] their series involving 480 cases of artificial pneumothorax, find the occurrence 3 per cent, they also found the consequent mortality but 19 per cent, for they had fewer far advanced patients taking treatment.

The symptomatology of accidental collapse in artificial pneumothorax patients is, to our mind, as follows. Pain is slight and dyspnœa, as a rule, is not pronounced. The elevation of temperature and of pulse is not so great as that seen in other types. Mr. S. showed a rise to 101 degrees in his temperature and the pulse increased to 105.

In these patients cough increases due to pleural irritation, and is also caused in some instances by an increase of sputum where the chest fluid finds its way through a patent fistula to the bronchi. Mr. S. had, and still has, periodically, drainage of his pyopneumothorax fluid through the fistula in his lung and hence by way of the trachea to the mouth. Such patients do not often escape without the formation of fluid which runs an excellent opportunity of becoming the seat of mixed infection, even should it not be spat up later.

In this type startling pressure symptoms are not to be expected, for the compressed lung is apt long since to have developed adhesions which prevent an extensive collapse. For the same reason the symptom of sleeplessness is not in evidence except as the usual insomnia of a nervous phthisical individual who has just suffered an accident.

The facies must show worry but not the fear of one who is upon the "brink" with a large spontaneous collapse of the lung.

The physical evidences of the accident depend as before on the extent of compression; and while the appearance of acriflavine or or methylene blue-tinted sputum is not *prima facie* evidence of a bronchial fistula, when the foreign colour becomes more than a tint and is intracellular in an increased sputum it behoves one to be suspicious.

The treatment is thoracoplasty, if this is at all feasible. Such patients as Mr. S. was in 1923, when he developed a needle-track infection, would be far safer if they had thoracoplasty performed then, for too often they develop later on a bronchial fistula.

CASE 5

A Mr. J., aged 24, is a patient illustrating a large spontaneous pneumothorax, in which there was no demonstrable evidence of tuberculosis.

Two years ago this man was ill for a few days with pleuritic pain and was strapped with adhesive plaster. He also had three ribs broken several years ago on the same, that is the left, side. Of family history there is only this, that, since his accident one sister has developed pulmonary tuberculosis with positive sputum. He was a young business man who had shortly before the accident driven two hundred miles in a car. Suddenly, whilst singing, he was seized with a choking feeling in his throat, about the region of the episternal notch, which caused him to double up and sit down. At the same time he became very short of breath, and at each attempt to straighten up a pain of a tearing nature came on, which forced him to desist.

He states that he perspired considerably at the time, particularly about the forehead, but this lasted only half an hour. He was much alarmed fearing that he had had a heart attack. That night he retired early and slept well, and next day was driven the two hundred miles home in fair comfort, except that whenever the car struck a bad rut it produced a pain in his chest.

So far as he can tell me there was no flushed feeling to suggest that he had a fever, but his heart did seem to beat faster after the accident. The next day, after reaching home, he drove 25 miles to this sanatorium for x-ray examination, etc., where it was found that he had a 75 per cent collapse of the left lung. The dyspnœa and choking sensation passed away three weeks after the accident, and in six weeks the lung was fully expanded again, as seen by x-ray.

At home the patient did no work and took considerable rest in bed, and two months after the accident, he was apparently in good health although somewhat nervous, but with little if any physical signs to indicate that either side of his chest might be diseased or recently disordered.

His symptoms may be summarized as follows: a choking sensation in the throat; dyspnœa, sudden and marked; pain in the chest, tearing in character; sweating, considerable but over a short period; anxiety; pulse rate probably elevated; temperature probably not elevated very much, if any.

CASE 6

Miss K. S., aged 23, illustrates the gradual onset of a large spontaneous pneumothorax in

a woman having no demonstrable evidence of tuberculosis.

At the time of the accident (in 1919) she was a big strong athletic type of girl, weighing 150 lbs. For six days she noticed that she was gradually becoming shorter and shorter of breath, and on the seventh day the dyspnœa was so marked that she sought medical advice. The x-ray demonstrated a collapse of all three lobes on the right side, amounting to 90 per cent. She resumed her usual home life and six weeks later breath sounds were again normal over her chest, and the lung had re-expanded as seen by fresh plates.

In 1923, and again in 1925, this same curious phenomenon recurred. At no time was there any evidence of pulmonary tuberculosis. So far as I can find out none of the other symptoms of spontaneous pneumothorax appeared.

When we consider the occurrence of a spontaneous pneumothorax in people who have no tuberculosis or any other apparent cause to account for this strange happening we are apt to say with Hamlet: "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy." We may say that there must have been a small ulcerative process, or that an adhesion has been torn, or we may just say nothing.

The frequency with which this happens is not at present reduced to figures. C. W. Hayes, in the article before quoted, speaks of having found 60 cases mentioned in the literature prior to December, 1923, and it is likely that most or all chest specialists in Canada have seen such cases. The writer has seen only one spontaneous pneumothorax of this type. In this man (Case 5) the cause, or what we may speak of as the cause, is not out of the ordinary. There was a history of pleurisy and of trauma having occurred previously on that side, and it developed later that there was tuberculosis in his family. It is worth mentioning, at least, that two things calculated to cause trouble in a diseased chest had been done shortly before and at the time of the accident. They were a long car drive and the act of singing.

Coming once again to the symptoms of large spontaneous pneumothorax. There are found the pain, which is here definitely tearing in character; the dyspnœa also sudden and marked; and the sweating. Due to the circumstances, we cannot stress the action of the body temperature or the pulse rate, nor can we enlarge on the cough and sputum, for there was none. But the choking sensation and the anxiety were definitely present. There was apparently no lock of sleep and no dysphagia or pain in the opposite side. Fluid did not form, and in the usual time, which is from six to ten weeks, the lung re-expanded.

Case 6 illustrates still another point—that the leak may be very gradual, spread over a period of seven to ten days; and this seems to the writer more in keeping with the classification of no demonstrable tuberculosis, although it is, perhaps, rarer. Nor is this the only patient on record who repeated this performance.

In treating these people, if they allow themselves to be advised, it would certainly not be amiss to place them under a regimen in which they abstain from all physical labour and take fifteen hours of bed rest a day for a period of six months. Their progress seems to be uniformly good.

If it is possible to prove a tubercuIous origin then the individual falls in the group which can be treated.

In closing, the author would like to express his debt to Dr. Russel J. Collins of Riverglade, N.B., for the latter's teachings and for the stimulation given to produce this article, which may, we hope, produce a still further study of the subject of spontaneous pneumothorax.

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AN ANTIDOTE FOR MORPHINE POISONING.—Dr. F. E. Loewy writes: It is of considerable practical importance, but not yet sufficiently appreciated, that we possess a powerful stimulant of the respiratory centre—the alkaloid lobeline, which is now available in sterilized ampoules, and can be used safely under precautions. It has proved very effective in poisoning by morphine, hyoscine, and other depressants of the respiratory centre, and should certainly be given in cases like those reported by Mr. A. E. Mortimer Woolf on March 16th (p. 499), when respiratory failure occurs after the administration of heroin. An ampoule of 1/20 grain should be injected intravenously very slowly, drop by drop. The effect is immediate but transient, and the injection may be repeated every ten to fifteen minutes. Intramuscular or subcutaneous injection of 3/20 grain is also very useful, but less reliable. Lobeline should be at hand in every operating theatre.—*Brit. M. J.* **1:** 796, April 27, 1929.

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ETHYLENE ANÆSTHESIA*

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IN the past three or four years considerable research work has been carried on with this comparatively new anæsthetic gas—ethylene. In fact, there has been so much said in its favour that there is little for me to add. Ethylene has some few disadvantages which are far outweighed by its superiority over any other anæsthetic agent. If it had not been heralded as a highly explosive and dangerous gas, I feel sure it would be in more general use to-day. My opinion of ethylene is based on careful observation of its effects in one thousand cases of anæsthesia, covering a wide range of operations, from a simple abscess to abdominal Caesarean section followed by hysterectomy in an eclamptic patient. The ages of the patients varied from a few months to fourscore years.

Ethylene, or olefiant, gas was probably first used as an anæsthetic agent as early as 1849 by Nunnelly, and, later, by various workers on animals. It was not until 1918, however, that serious study was first given to it, by Luckhardt and Thompson, whose first experiments were performed on frogs, rats, and, later, dogs. This work was also carred out by Eason Brown,[1] and to him belongs great credit for its practical use to-day. In 1923, Luckhardt and Carter[2] reported the first 106 cases operated upon under ethylene at the Presbyterian Hospital, Chicago. Since that time ethylene has come into popular use, and is used at the Mayo Clinic, the Lahey Clinic, and other large surgical centres, both in Canada and the United States.

Ethylene is an unsaturated hydrocarbon gas, and liquefies at ten degrees C. under 60 atmospheres pressure. It burns with a luminous flame, and with a certain percentage of air or oxygen forms a highly explosive mixture. It has a peculiar odour, described by some as that of wet matches, and although unpleasant at first, one soon becomes accustomed to it. In weak dilutions (1:5000) it has been used to ripen fruit. In its preparation one of the greatest difficulties has been to eliminate carbon monoxide from the gas. By recent delicate methods, this has been accomplished. The gas is shipped in the usual steel tanks under high pressure.

The surgeon who is accustomed to operating on patients anæsthetized with ethylene rarely has any complaint to make. It is usually the surgeon who is unaccustomed to gas anæsthesia, or one who lacks manipulative ability, that experiences difficulty with ethylene anæsthesia.

With the administration of ethylene we have found that the success of the anæsthesia obtained, and the best post-operative results are only in evidence when proper premedication to suit the individual case has been employed. We have met with success at St. Joseph's Hospital, Toronto, using morphia gr. ¼, which has a better effect when combined with atropine gr. 1-150, one half hour before operation. In laparotomies and thyroid operations we give morphia gr. ¼, and hyoscine gr. 1-200, one and one-half hours before operation, the morphia being reduced in some cases.

Anyone familiar with gas anæsthesia can quite safely administer ethylene. The gas is administered with any of the usual types of gas machines, and I believe that the machine has little to do with the success of the procedure, provided that the anæsthetist is familiar with the machine he is using. We use the usual rubber face-piece. Inform the patient that after a few breaths sleep will be quickly induced, and hold the rubber face-piece, with the exhaling valve open, fairly close to the face. As consciousness is lost, the face-piece is pressed close to the face. The mixture to start with is 90 per cent nitrous oxide (to eliminate the odour of ethylene) and 10 per cent oxygen. After a few breaths I stop the oxygen for one or two breaths, and then turn on a mixture of ethylene 90 per cent, and oxygen 10 per cent, and close the exhaling valve.

Respiration is regular. Struggling, or even moving of the legs or arms, is of rare occurrence. If the colour is good, I maintain this mixture until surgical anæsthesia of the proper depth is

*Read before the Section of Anæsthesia, Academy of Medicine, Toronto, February 28, 1929.

obtained. It is in the interest of the patient to maintain a high oxygen percentage in the mixture. The mixture is therefore varied to give the maximum amount of oxygen. This usually results in smooth anæsthesia being maintained with a mixture of 80-85 per cent ethylene and 15-20 per cent oxygen. I have the patient rebreathe about three-quarters of the time. The use of the exhaled carbon dioxide in this manner gives a smoother anæsthesia, requires less ether (if any) and is more economical. The better the preliminary medication, the higher is the percentage of oxygen that can be given. If after the skin incision has been made, the blood appears dark, (in spite of a pink colour of the skin) increase the percentage of oxygen.

In about 70 per cent of all cases ether is unnecessary. If relaxation is not sufficient, ether is administered, maintaining the same gas mixture. Let me state here, that if it is necessary to give ether, give it in sufficient quantity rapidly, and this will suffice for the remainder of the operation in the majority of instances. I have seen nitrous-oxide-oxygen given with the ether pet-cock turned on part way during the greater part of the operation. Surely this is not good gas anæsthesia. It has been my ambition to obtain anæsthesia with a minimum amount of ether, and with ethylene I feel that this can be accomplished. When the skin is being sutured I change over to a mixture of 90 per cent nitrous oxide and 10 per cent oxygen, and open the exhaling valve, and continue in this manner until the operation has been completed. The bag is then emptied and filled with oxygen. I find this eliminates the odour of ethylene which the patient might object to on regaining consciousness, and also the headache, which so often follows any gas anæsthesia.

The effects of ethylene anæsthesia on the patient are such that no one, observing the patient carefully on the table and after returning to the ward, can fail to appreciate its superiority over other anæsthetic agents. The patient does not lose such a quantity of fluid from sweating, so common to other anæsthetics. The body temperature does not drop, and the colour remains good. In the matter of nausea it compares favourably with nitrous oxide. There is practically no effect on the basal metabolic rate. The kidney function may be slightly reduced.[3] There is no effect on the liver. I have administered ethylene in active lung cases without any noticeable harmful effect. In heart lesions its beneficial effects are probably due to the slow pulse rate. Ethylene is eliminated very rapidly from the lungs. It has less effect on blood pressure than any known anæsthetic. There are no gas pains, yet peristalsis returns very rapidly.

To estimate the advantages of ethylene, let us consider these under the various types of operations. For thyroid surgery the minimum effect on toxic cases is most beneficial. The patient is easily aroused from the light anæsthesia. The oxygen percentage can be maintained at a high level, without the use of ether. In over one hundred cases we have never found it necessary to add any ether. These patients usually have a high basal metabolic rate; this is not increased under ethylene. The slow pulse rate is certainly beneficial to the already overtaxed heart. Others may disagree, but I am convinced that ethylene is the anæsthetic of choice, not excepting local anæsthesia. For gall-bladder surgery, in which condition there is always some degree of hepatitis, the absence of any effect on the liver tissue hastens convalescence.

In obstetrics the greater relaxation obtained with ethylene tends to shorten the second stage of labour and eliminates the possibility of laceration of the pelvic floor. For dental work the jaw is relaxed with lighter anæsthesia, and the anæsthesia is not so deep as with nitrous oxide. For fractures it can be used for manipulation to advantage in debilitated subjects, but not where the x-ray has to be used at the same time. Diabetics seem to take ethylene without any deleterious effects.

I have purposely left the disadvantages of ethylene to the last, believing them to be of minor import. Regarding its odour, I have never had a patient complain of this; I have administered it to several surgeons, and they would be the first to complain. The odour can be eliminated by starting and finishing with nitrous oxide.

The other possible disadvantage is involved in the question of explosiveness. Dr. Eason Brown, in a verbal communication, informed me that, in his opinion, it would take twelve hours of continuous use of the gas in a closed operating room before the mixture with the air would be explosive. Other writers[4] state that the mixtures as used for anæsthesia are not explosive. John K. Mabbs, research engineer, after exhaustive research, reports that "The relative explosion hazards of ether and ethylene when mixed with

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air or oxygen are practically equal." According to the United States Bureau of Statistics, ethylene is no more explosive than ether, in the mixtures used for anæsthesia.

No doubt there have been explosions, I know of one very serious one, but in all these instances there has been carelessness in using the actual cautery or in leaving the tanks turned on or the bag full at the conclusion of the operation. I have on two occasions unwittingly administered ethylene with an open flame, within four feet of the gas machine, without disastrous results. However, while still under suspicion, we should take all the precautions available when using ethylene. To this end there is an excellent system of grounding the machine described by Isabella Herb, and this method is used in the Presbyterian Hospital, Chicago, where so much ethylene is used. Horner and Gardiner[5] state that carbon dioxide lessens the chance of explosion, and suggest flushing out the machine with carbon dioxide before using ethylene. Personally, I have not felt it was necessary to be more cautious than when using ether.

The perfect anæsthetic agent should satisfy the patient, the surgeon, and the anæsthetist. Every agent known seems to fail in one respect or another. In ethylene I believe we have an anæsthetic agent which satisfies to the greatest extent all three persons concerned, and feel that this is gradually being shown by the increased number of anæsthetists advocating the use of this anæsthetic.

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THE INDUCTION OF LABOUR

BY WALTER R. FLETCHER, M.D.,

Montreal

THIS article is a review of all the cases of labour induced by bag or bougie occurring in the Royal Victoria Montreal Maternity Hospital and the old Montreal Maternity during the past five years. It is intended to show the actual time taken when labour is induced, together with other facts.

From 1923 to 1927 inclusively there was a total of 240 cases, of which 206 cases (or 86 per cent) were bag-inductions, and 34 cases (or 14 per cent) bougie-inductions, showing how much more frequently the bag method was employed.

The indications for these inductions by the bag method are shown in Table I. It will be noted that toxæmia heads the list, with 47 per cent. Under toxæmia have been grouped, eclampsia, albuminuria, hypertension and pernicious vomiting. Disproportion stands second, with 20 per cent. This was almost entirely due to the various types of contracted pelves. The third largest group is hæmorrhage, which includes placenta prævia, premature separation of the placenta, and also low implantations, with 14.1 per cent. These three large groups constitute 81 per cent of all the indications.

Table III shows the complete duration of induction, the duration of the bag only and the duration of the pains, for all cases, and for both primiparæ and multiparæ. The complete duration of induction is from the time the bag was

TABLE I

INDICATIONS FOR BAG-INDUCTION

Indication	*No. of Cases*	*Percentage*	
1. Toxæmia	97	47.1	81.6
2. Disproportion	42	20.4	
3. Hæmorrhage	29	14.1	
4. Clinical (demonstration purposes)	9		18.4
5. Pyelitis	5		
6. Cardiac conditions	5		
7. Post-maturity	4		
8. Mal-presentations	3		
9. Pulmonary tuberculosis	2		
10. Unknown	2		
11. Epilepsy	1		
12. Toxic deafness	1		
13. Deformed coccyx	1		
14. Acute arthritis	1		
15. Ovarian cyst	1		
16. Dry labour	1		
17. Rigid cervix	1		
18. Weak abdominal walls	1		

introduced until the birth of the baby. The duration of the bag only is from the time it was introduced until it was expelled. The duration of the pains is from the time the pains began, following the introduction of the bag, until the birth of the baby.

TABLE II

INDICATIONS FOR BOUGIE-INDUCTION

Indication	*No. of Cases*	*Percentage*	
1. Toxæmia	14	41.1	64.6
2. Disproportion	8	23.5	
3. Clinical	2		35.4
4. Prophylactic	2		
5. Hydramnios	2		
6. Post-maturity	2		
7. Cardiac conditions	1		
8. Insanity	1		
9. Varicose veins	1		
10. Sarcoma	1		

Note the absence of hæmorrhage as an indication.

TABLE III

	Total Cases	*Primiparæ*	*Multiparæ*
Complete duration of induction	23.9 hrs.	33.8 hrs.	17.7 hrs.
Duration of bag only	18.3 hrs.	25.1 hrs.	13.7 hrs.
Duration of pains	15.8 hrs.	23.0 hrs.	11.5 hrs.

Table IV shows the same thing for bougie-induction.

TABLE IV

	Total Cases	*Primiparæ*	*Multiparæ*
Complete duration of induction	40.1 hrs.	52.2 hrs.	26.8 hrs.
Duration of bougie only	26.1 hrs.	37.7 hrs.	13.6 hrs.
Duration of pains	21.0 hrs.	32.9 hrs.	10.8 hrs.

In 5 cases the bougie method of induction failed and the bag was resorted to.

It is usually taught that a bag induction takes only about ten hours, but these figures go to show that it takes a considerably longer period. It will be seen that in primiparæ the time taken for induction by either method is doubled in comparison with multiparæ.

The danger of a bag-induction is a prolapsed cord. This occurred in 13 cases, or 6.3 per cent. Of these 13 cases, 8 babies were born alive and 5 were dead, making a fetal mortality of 38.4 per cent from prolapsed cords.

The maternal mortality for the 206 cases of bag induction was 1.94, or nearly 2 per cent; and the infant mortality was nearly 23 per cent. Twenty-nine per cent were classed as "febrile," the temperature having reached 100.6° on one or more occasions.

There were no maternal deaths for the 34 cases of bougie induction; the infant mortality was nearly 15 per cent, and 18 per cent were febrile.

The technique for bag-induction, as carried out in this hospital, is as follows:—

The patient is given an enema and then shaved. She is then placed in the lithotomy position and the vulva and vagina scrubbed with green-soap and sterile water, followed, after catheterizing, with biniodide solution. The cervix is exposed by a posterior retractor, and grasped and pulled down with a tenaculum forcep. Dilatation is accomplished by Hegar's dilators, so that the index finger may be inserted and the membranes gently stripped back. The bag is then rolled tightly, and grasped by a special type of forceps for introducing. It resembles Tarnier's forceps on a small scale, and has a special sliding lock, so that the blades may be easily disengaged by merely pulling back the anterior blade about one-half inch. The bag is introduced and partially filled with sterile water by a rubber bulb, similar to that seen in enema sets. The forceps is then removed and the bag completely filled and the stem tied. Packing is usually inserted around the neck of the bag and into the vagina. A one pound weight is attached to the bag after the pains have begun.

THE OSLER CLUB.—The Osler Club celebrated its first anniversary at a meeting held on Tuesday, April 30th. The secretary, presenting his report for the year, paid a tribute to the splendid work of the club's foreign secretary. Sir Farquhar Buzzard, in a paper on the history of neurology, traced the growth from neurological aspects of other sciences of the independent science of neurology, for which he foresaw a future of great importance in the elucidation of the problems of education. Mr. Falconer Madan charmed the meeting with an address on Osler and Burton, full of the rare fruits of his wit, wisdom, and scholarship. Dr. J. D. Rolleston gave a brief account of the life and work of Billroth, and Sir D'Arcy Power and Mr. W. G. Spencer took part in the discussion. The club's collection of Osleriana was exhibited, together with portraits and works of Burton and of Billroth. Among those present were Dr. H. Morley Fletcher, Professor Gask, Dr. G. B. Harrison, Professor Fraser-Harris, Dr. Schroeder (of the Anglo-German Academic Bureau), Mr. Geoffrey Keynes, Dr. A. P. Cawadias, Mr. Hugh Cairns, Mr. C. Wilson, the Conservator of the Wellcome Historical Medical Museum, the librarian of the Royal Society of Medicine, and Mr. Philip Franklin.

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DIATHERMY IN MORBID CONDITIONS OF THE ARMS AND LEGS

BY JOHN HUNTER, M.B.,

Toronto

HEAT is so universally employed for the relief of pain that the use of diathermy (conversive heat which can be produced in all the tissues by means of friction between the cells and swiftly moving electrons) is practical, logical, and scientific. It is very easily applied, and, unlike hot applications, the temperature does not vary. Its great potency as an analgesic makes its use logical, and the production of a high frequency current (a million or more oscillations a second) that can be safely used as a remedial measure is an advance that should be duly recognized.

The following are some of the effects produced by diathermy: (1) dilatation of arterioles and capillaries; (2) physiological hyperæmia; (3) increase in functional activity of cells.—metabolic and katabolic; (4) elimination, through a more active arterial, venous, and lymphatic circulation; (5) increase in functional activity in both visceral and endocrine glands; (6) relief of hypertension in both striated and smooth muscle tissues; (7) potent analgesia; (8) safe and efficient hypnosis; (9) restoration of mental and physical well-being.

The following cases may be advanced as illustrating the value of diathermy.

CASE 1

A medical man aged 89, with a history of traumatism of the ankle. The patient had been under medical care for two months when referred for treatment by electrotherapy. The foot, ankle, and the leg as high as the knee were much swollen, with superficial ulceration of sections of skin. The patient was exhausted from loss of sleep, and appetite. Diathermy was employed—one electrode (smaller) on the sole of the foot, the other above the knee, and heat to toleration for half an hour. This treatment was given daily for a week, then tri-, and bi-weekly; later weekly for two months. The pain was promptly relieved, appetite and sleep returned, and the patient was able to walk. Three months later he said that the "ankle was the better of the two." Six months later the right forearm and hand became disabled; there were pain; swelling of the forearm and right hand; and loss of the special senses—touch, heat, cold, from arteriosclerosis of the ulnar and radial arteries; he could not button his coat owing to loss of sensation of touch. The circulation in the radial and ulnar arteries was greatly impeded from arterioselerosis. Diathermy was used, one electrode placed on the arm, the smaller one on the hand. Sufficient collateral arterial circulation was obtained to completely relieve the morbid conditions. Sensation and functions were restored and retained.

CASE 2

This patient was a female, aged 72, with arteriosclerosis of the anterior and posterior tibial arteries. Signs and symptoms of impaired circulation were noticed in 1924. She was under medical and surgical treatment until June, 1927. Amputation at the ankle was proposed. The patient showed all the classic signs and symptoms of gangrene. A very conservative prognosis was given—a possibility of establishing a sufficient collateral arterial circulation to supply the foot and toes. The foot was submerged in a warm saline solution, and an electrode placed under the sole, also a larger one above the knee; heat to toleration was applied for half an hour. The foot became warm and the pain was relieved. Treatments were given daily for two weeks, then tri-, bi-weekly and weekly for two months. During this time deep fissures extending the full length of each toe (plantar surface) and one encircling the little toe healed. Normal conditions and functions were restored at the end of four months, and are still retained.

CASE 3

A female, aged 18, previously healthy. About ten hours after an injection had been given (on account of exposure to scarlatina) she felt a severe pain in the back of the neck, and next morning the left deltoid was paralyzed. She could not abduct the arm, and it would fall helplessly when raised. She was under the care of her own physician at first, and later tried a chiropractor and an osteopath. No improvement in function followed, but there was some atrophy of the deltoid at the end of the fourth month. Diathermy was used, an electrode 2·12 being applied over the cervical and upper dorsal region, and one on the palm, with the hand submerged in warm saline solution. Complete restoration of function and of metabolism of the deltoid resulted within two months. She was able to swim.

CASE 4

A female, aged 34, received a deep puncture in the mid-tarsal region from a rusty nail. The signs and symptoms of an acute infection quickly followed. She was treated at home for twenty-four hours. The patient walked from her car into the office on crutches, with one leg sharply flexed at the knee. Reddish lines extending along the dorsum of the foot and up the anterior surface of the leg to the knee, which were painful on pressure. An electrode was placed on the sole of the foot, which was immersed in a saline solution, and another above the knee. The heat completely inhibited further infection, and about forty-eight hours after first treatment, while the foot was immersed in hot water, there was a painless and very free discharge of pus through the puncture made by the nail. The patient resumed her vocation (dining-room service) next day, and complete recovery resulted within a week.

CASE 5

A male, aged 18. While working in a planing mill he was struck on the upper anterior surface of the

thigh. Home treatment was tried for three days, and when he called signs and symptoms of a large abscess were found, which was freely opened and drained. Prompt relief was given, but four or five days later signs and symptoms of a deeper infection involving the periosteum appeared. Striving to avoid, if possible, the necessity of making a deep incision, diathermy was used. The patient was asked to endure a rather intense sensation of heat in order to inhibit infection in the deeply seated tissues. The first treatment relieved pain and inhibited any further infection. Three more were given within two days. The result was complete recovery without suppuration.

CASE 6

A female, aged 20, previously healthy. The left knee became acutely inflamed from an unknown cause. The classic signs and symptoms of inflammation appeared. Diathermy was used about six times, but the pain was so much relieved after the first treatment that she continued her work in a factory, walking several blocks each day, and bowling at night.

An interesting incident occurred while the writer was treating this case. Another young woman was under treatment for the relief of pain from ankylosis of the knee joint. She said that her knee had become acutely inflamed a year ago. Several laboratory tests were made, but no specific cause found. A plaster cast was applied, and when removed two months later the joint was ankylosed. Readers can place their own valuation on the forms of treatment used in these two cases.

Case Reports

A CASE OF EXTENSIVE ATROPHY OF THE SUBCUTANEOUS FAT FOLLOWING INJECTIONS OF INSULIN*

BY I. M. RABINOWITCH, M.D.,

Montreal

Atrophy of the subcutaneous fat in diabetics, following the injection of insulin, if carefully sought for, is not a rare condition, though, to date, there are less than twenty-five cases reported in the literature. A summary of all the recorded cases, including those previously reported in this *Journal* by the writer, was recently reported by Avery.[1] Carmichael and Graham suggested that this condition might be due to the insulin itself, because of the presence of minute amounts of fat-splitting ferments, since insulin is prepared from the pancreas. In view of this suggestion, the writer, as previously reported,[2] concentrated large volumes of insulin at low temperature and under reduced pressure, and even under these conditions was unable to detect any lipase. Avery concludes from his studies that the subcutaneous fat atrophy is a non-specific reaction and is the result of repeated traumata to the panniculus adiposus and suggests that the con-

* From the Department of Metabolism, The Montreal General Hospital, Montreal.

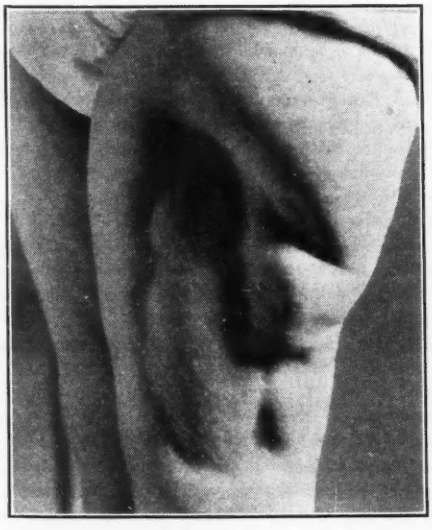

FIG. 1

FIG. 2

dition be called "traumatic atrophic panniculitis." There is nothing remarkable about such patients otherwise, either from the clinical or laboratory aspects. The condition appears to bear no relationship whatever to progress or prognosis.

The following case report is added to the literature for two reasons—firstly, it is the most marked that the writer has met with, and, secondly, it bears the first photographs of the condition to appear in this *Journal*.

Briefly, the patient (Hosp. No. 3824/25) is a female, 26 years of age, who has been receiving insulin since August, 1925. There is nothing of special interest either in the clinical or laboratory data, with the exception of the fat atrophy. In spite of very severe diabetes prior to the institution of insulin treatment, she has since given birth to a healthy child and the course of the pregnancy was uneventful.

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HAIR DYES.—It is true that the harassed medical student has not yet to be "signed up" in hair dyeing before he may satisfy his examiners that he it fit to practise, but the subject is by no means devoid of medical interest. Never before in the history of the world would people seem to have been so reluctant to accept philosophically the approach of old age; never so much as to-day have the resources of the chemist been made to serve the desire to maintain a youthful appearance. While, however, the chemist may take some pride in the efficiency of the innumerable dyes which have been devised to mask the presence of white hairs—so shattering, apparently, to the illusion of youth—the physician's interest is engaged by the fact that many of the chemicals employed are far from harmless and that his services are sometimes invoked to treat cases of poisoning brought about by their application. Notwithstanding the efforts of the practitioners of cosmetic arts to veil their proceedings in mystery, a great deal of information bearing on the subject may be gleaned from the trade publications serving the members of the hairdressing profession and from scattered papers in various chemical journals. We welcome, however, the publication of the book which bears the intriguing title *Blonde or Brunette?** for within its small compass the authors have collected, and presented, simply yet scientifically, all that the medical man needs to know about this subject. It is interesting to read that henna, which has enjoyed a high reputation since Biblical times, and is still largely used for cosmetic purposes, might be considered the ideal hair dye, but for the fact that it requires more skill in its application than some other substances. Successfully applied, it gives a wide range of good colours, and has the great advantage of being perfectly harmless. To-day the ideal hair dye must not only produce with safety a permanent colour, natural in appearance, but it must not render the hair less responsive to the treatment known as permanent waving. In this respect the metallic dyes fail, though all of them which depend for their action on the reduction of silver or some other metal by a solution of pyrogallol are in other respects quite satisfactory. It is on account of this unfortunate defect in the metallic dyes that hairdressers are greatly tempted to employ the convenient dyeing agent paraphenylenediamine (known to the trade as "para"), which is endowed with all the attributes of the perfect hair dye, except that it is extremely toxic to susceptible persons. In these it produces a virulent dermatitis, which may extend far beyond the area of its application, and has even been known to affect the whole cutaneous surface. If, moreover, the victim of an attack is so foolhardy as to risk further contact with the exciting substance she will suffer even more severely than she did the first time. The fact that only 1 per cent of healthy persons are susceptible encourages many hairdressers to risk using this chemical without testing their client's sensitiveness. The test is carried out quite simply, by applying a small quantity of "para" to the skin behind the ear and waiting twenty-four hours for the possible development of erythema. If the skin remains normal in that time the dye may be applied with safety. The fact that paraphenylenediamine gives the required tint almost instantaneously, while pyroreduction dyes require forty-eight hours to achieve their effect, is an additional source of temptation to the hairdresser, especially when a client demands cosmetic treatment before attending a social function the same evening. The toxic qualities of "para" are so well known to the trade that hairdressers have occasionally tried to escape the wrath of poisoned clients by denying its use, alleging that they had applied a dye of the pyro group; this defence, however, can never deceive those who know the instantaneous tint produced by the former and the delayed action of the latter. Pyro-reduction dyes are irritant only if the pyrogallol solution is of excessive strength. Medical men who desire to know more of the technique of hair dyeing, the chemistry of the dyes used, and their effects on the health and appearance of the hair, would do well to consult this concise treatise.—*Brit. M. J.* **1:** 1048, June 8, 1929.

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* *Blonde or Brunette?* By H. Stanley Redgrove, B.Sc., A.I.C., and Gilbert A. Foan, President of the Hairdressers' Trade Parliamentary Committee. London: W. Heinemann (Medical Books) Ltd., 1929, 7s. 6d. net.

Editorial

MEDICAL EDUCATION*

OF the several sources of information investigated by the Commission on Medical Education, in search of suggestions for the improvement of teaching, not the least interesting were the licensing boards. These testify to such improvement in the preparation of candidates that only five per cent of recent graduates failed in 1925, as compared with more than sixteen per cent in 1905. Some State Boards are of the opinion that it is now safe to eliminate examinations in all but the clinical subjects (a common practice in Canada), except in the case of candidates from other than Class A schools. From one State board comes the very shocking statement: "The medical licensing examinations, as such, are not worth a tinker's damn." (Our ample apologies to the super-sensitive.) Others are both less frank and less positive in this and other particulars. Some Boards are critical, not only of their own methods but also of the methods of the schools. A rather common complaint is that students are not prepared to deal with minor maladies, but the outstanding criticisms are directed against the teaching in therapeutics and preventive medicine. In respect of therapeutics, the Commission reports that a number of the examiners comment on the *fact* (our italics) that in some instances they still use for examination methods of therapeutics which have been abandoned! This illuminating statement does not weaken the position of those who contend that licensing bodies should, instead of examining candidates, maintain a strict appraisal of teaching faculties and admit to licensure only those who are graduates of satisfactory schools—men whose diplomas are sufficient guarantee of competency and suitability—so that they need not be submitted to a "Board" examination under such an arrangement. The cult schools might present a problem, but they would be none the worse for a check-up by licensing boards similar to that suggested for the regular schools.

A few years ago much was said in condemnation of examinations as usually conducted. Most of those who cried out for reform in this particular wearied in their well-doing and little has been heard about it of late. And the geniuses who could devise simplified, psychological, and other ornately-named methods of examination, have ceased such highly specialized activities. Of course, even the most enthusiastic champion of the examination could not proclaim it as an infallible test, nor could he condone freakish methods which, while delightfully easy for both candidate and examiner, are little more than tests of the accuracy of quite recent acquisitions of memory. Questions so worded as to give the candidate opportunity not merely to recall facts but also to marshall them in logical sequence and to use them reasoningly and judicially are, perhaps, the best devices at our disposal for determining the candidate's fitness. Those who are inclined to "flop" at such an examination are likely to "flop" in any emergency and require immunization against a tendency so subversive to success in practice. How could immunity be conferred more innocently or more conveniently than by the examination? The Commission declares that "comprehensive examinations are an effective instrument to stimulate the student to assemble, organize, correlate and present his knowledge of a subject or problem, and should be more generally used." All of which indicates that the examination is not merely a test of potentiality but perhaps more emphatically an instrument for teaching.

After he had sheared the pig, the devil admitted getting much cry but little wool. Whether or no those who would eliminate the lecture are to succeed in doing more than to elicit an outcry is a question to be answered in the future. The outcry of those *pro* the lecture is really no greater than that of the

*The first editorial by Dr. Hattie on this subject appeared in our May issue, and the second in June [Ed.]

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cons, and it is difficult to say which side has the advantage. But it is interesting to note the concern which has been created by the discovery that the lecture is comparable to spoon feeding. Soups certainly, and oatmeal porridge, possibly, are nourishing foods which cannot be conveniently or profitably eaten with a knife and fork. Are they therefore to be eliminated from the menu? And must one who is once spoonfed be always spoonfed? Not many years ago the quiz was advocated as a substitute for the lecture, but it has been found that a talent for quizzing is just as necessary for good quizzing as a talent for lecturing is necessary for good lecturing. Now seminars or conferences in small sections are held up as ideals. Will such eliminate the danger of spoonfeeding? We trust that there may not be any tendency to dogmatize in respect of teaching methods. Because a seminar is a seminar it is not necessarily effective. A good lecturer may be a wretched quizzer. It must not be forgotten that there are diversities of gifts. "If the whole body were an eye, where were the hearing? If the whole were hearing, where were the smelling?"

By the simple process of making a virtue of a necessity, the non-medical teacher of medical subjects has become a feature of our day. His entrance to the domain of medical teaching was not welcomed, but he had to be accepted because qualified men who had taken the doctorate in medicine were not available in numbers sufficient to meet the needs. In general he has proved his worth and has been a conspicuous factor in the improvement of teaching in both the preclinical subjects, where his influence has been direct, and in the other subjects, where he has exerted a reflected influence. While he has not been regarded as quite belonging to the fold, he has become more and more necessary to it in proportion to the demand for teachers in the laboratory subjects. And now he is being charged with a full share of the sins laid against the system of medical teaching. When it was argued that a scientific subject should be taught without any special reference to its relationship to medicine, there was comparatively little criticism. Now, however, it is being urged that proper correlation of teaching demands that all subjects of the curriculum be related as much as possible, and that a sympathetic understanding of the needs of the future practitioner cannot be expected of a non-medical teacher. We feel that this argument would be stronger if no teacher who has completed the medical course could be accused of non-co-operation, and particularly if every teacher were required to be a practitioner—which is obviously impracticable. Just now a few schools are staffed almost entirely by men who give all their time to teaching, where the clinicians may see no patients except in the hospitals associated with the School, and nevertheless such schools can be identified as real medical schools. All of which shows that medical education is mobile, that tradition does not determine everything, and that the complexity of the whole situation grows apace.

One may, by striving, derive much comfort from the thought that there are several ways of killing a cat. Likewise, there are varied means of improving the teaching of medicine. Of the reforms effected thus far, that which has been most generally acclaimed is the elaboration and accentuation of clinical teaching. More and more emphasis is being placed upon the desirability of intimate contact of teacher with pupil—of the closest possible approach to the intimacy of the old apprenticeship days. At the bedside, the small group has replaced the class to a very great extent, and the student sees and hears what, formerly, was reported to him as having been seen and heard by the instructor. The logical development from this is the interne year, which promises to become a universal requirement very soon. It is not hard to envision for each interne an ideal chief—perhaps, even capable of correcting the faults of the teaching in the earlier years. Realization may fall short of anticipation, but there is really more evident hope in the interne year than in any other suggestion that has yet been brought forward. The Commission points out, however, that the character of interne training should not be prescribed by regulatory (*i.e.*, licensing) bodies, and should not be subordinated to the needs of the hospital, but should be determined and supervised by the schools. Moreover, "only about ten per cent of patients are hospitalized, the great majority

are ambulant or ill at home, and the training of the student should take this situation into consideration."

It has been possible, in this short series of articles, to touch upon but a few of the many matters which are commanding the attention of medical educators. Enough has been said to indicate the need of reform, the complexity of the situation, and the greatness of the difficulties to be overcome. Perhaps, too, what has been said will serve to incite more general interest in the work of the Commission on Medical Education. If so, our main objective will have been achieved.

W. H. HATTIE

THE DEDICATION OF THE OSLER LIBRARY

AN event of more than ordinary importance, not only to McGill University and Montreal but to educational Canada at large, took place on the twenty-ninth of May when, with all due academic pomp and circumstance, the books so dear to the heart of Sir William Osler were formally handed over to the custody of the University.

The ceremony, which took place in the Assembly Hall of the Medical School was graced by the presence of several members of Sir William and Lady Osler's families:—Mr. H. S. Osler, K.C., Mr. E. H. R. Revere, the Misses Revere, Mrs. H. B. Chapin, as well as of some near relatives, Dr. W. W. Francis and Dr. Norman Gwyn, and Mr. John Chapin. Dr. E. W. Beatty, the Chancellor of the University, presided, and with him on the platform were, Principal Sir Arthur Currie, the Right Hon. W. L. Mackenzie King, Premier of Canada, Professor C. F. Martin, Dean of the Medical Faculty, Canon Chartier, Vice-Rector of the University of Montreal, Professor W. S. Thayer, of Johns Hopkins University, and the Very Reverend Arthur Carlisle, Dean of Montreal. Besides the speakers and members of the Medical Faculty, the four editors of the recently published catalogue of the Bibliotheca Osleriana were present: Dr. W. W. Francis; Dr. Archibald Malloch, the Librarian of the New York Academy of Medicine; Messrs. R. H. Hill, of the Bodleian Library, and L. L. Mackall, of Savannah, Georgia.

After an Invocation by the Dean of Montreal, Dr. Francis, the Oslerian Librarian, gave an intimate and detailed account of the origin and growth of the library, which numbers some 7,600 books, and quoted Sir William's own words, which tell so touchingly how he came to leave his beloved books to his old college.

> Though a wanderer living away from Montreal for more than half my life, I have never forgotten the early associations. The formative years were there with the strong ties of head and heart. As a young, untried man, McGill offered me an opportunity to teach and to work; but what is more, the members of the medical faculty adopted me, bore with vagaries and aggressiveness, and often gave practical expressions of sympathy with schemes that were costly and of doubtful utility. That they believed in me helped to a belief in myself, an important asset for a young man, but better had by nurture than by nature. Alma Mater, too, counts for much, and as a graduate of McGill I am proud of her record. Had I not seen the day of small things? Did I not graduate in the days of the Coté Street School? I may quote Fuller's sentiment: "He (the good Bishop) conceived himself to hear his Mother Colledge always speaking to him in the language of Joseph to Pharoah's butler, 'But think on me, I pray thee, when it shall be well with thee.' Then there is the natural feeling of loyalty to the country of one's birth and breeding. These are the considerations which decided me to leave the special collection to Montreal."

Professor W. S. Thayer, who had that day been honoured by McGill with its degree of LL.D., a close friend and associate of Sir William's, pronounced a most graceful eulogy on his late colleague, in which he dwelt upon his fine talents, his humanitarian interests and appealing personal qualities. His address appears in the present issue of this *Journal*, and will be read with great delight.

The formal presentation was made, on behalf of the family, by Mr. H. S. Osler, who regretted that, owing to the lamented death of Lady Osler, he had to assume a duty which it had been her keen desire and hope to fulfil herself. He said, also, that it was a great satisfaction to the family to know that through the library Sir William's memory would be kept green in the institution which had given him so much in his early years, and it was their earnest wish that the library would prove of real benefit to the people of this country and to all mankind.

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In accepting the gift on behalf of McGill University, Sir Arthur Currie was particularly happy in his remarks, which emphasized the value of books as enshrining the thought of the past and the inspiration for the future. McGill appreciated to the full the honour that was theirs—the honour of being selected as the recipients of this great collection. It was gratifying to know that when the most famous of her medical graduates considered at the end of his days the disposal of his possessions, his thoughts turned home—home to the college in which his footsteps were first guided in the path of medical knowledge. That home received with pride and gladness this gift of its famous son.

We could wish to give in full Sir Arthur's remarks, but considerations of space forbid. The acme of his effort was reached when he spoke of "the Osler tradition." His words here we must not fail to quote:—

> We think to-day of his wide learning, which was not narrowed by his enthusiasm for special research, his thoroughness, his exactness, his industry, his inspiring power as a teacher, his wisdom, but those who knew him best think more affectionately of his simplicity unaffected by his erudition, his humility unchanged by fame, his great kindness of heart, his patience with the dull student, his loyalty to his profession and to his friends, his disinterestedness, and the frank transparency of his character. These are the qualities which make up the Osler tradition—a tradition which will ever be a call to service in this place of his youthful studies and dreams and of his later efforts as a teacher.
>
> Because of this gift, which we now receive and accept with gratitude and pride, this Osler tradition will, in the future, be even a greater inspiration in McGill and in Canada. His spirit has been with us; now we seem still to have a tangible part of himself. For books are the most intimate companions of a man's labour and a man's leisure. Even when friends must be temporarily banished or shut out, these silent but eloquent companions of the printed page remain close to use, to speak to us words o knowledge or encouragement. In this Osler Library are the books his hands touched daily with affection as one touches a beloved child; here are the pages his eyes perused with eagerness in the search of knowledge or of strength; here are the gallant comrades of his hours of toil, while the heedless world rolled by; here are the companions of his moments of recreation and his brief periods of respite from labour. Surely these books are a sacred treasure, which will give daily to our students and professors a closer contact with a great spirit and will bring them, at their will, into a glorious company of immortals of whom their own great but humble fellow graduate was an honoured member. There could be no greater inspiration to Canadian youth than this splendid and sacred gift which is ours to-day.

The importance of the occasion was emphasized by the fact that appreciative messages were received by the University from Christ Church, Oxford (the College of which Osler was Student); from the Bodleian Library, which sent a beautifully printed letter; from the Osler Club of London; and from Dr. John F. Fulton, and Professor Nager, of Zurich.

And there the books stand on their shelves mute witnesses of the great spirit that has gone, and in the midst, as is fitting, the ashes of "The Chief." But one word more. The Osler Library is no mere museum of books. It is far more than that. The books have been selected for their educational value. In them we can read the entrancing story of medical endeavour and achievement; we can see the faltering steps of our predecessors on the road to knowledge; we can learn how those professing the art and science of medicine, like individuals, have risen "on stepping stones of their dead selves to higher things."

A.G.N.

THE PROBLEM OF THE MENTALLY UNFIT

THE problem of the mentally unfit has a biological, a social, a moral, and an economic aspect. The growing appreciation of this fact no doubt explains the interest that is now being taken in this most important subject, which is being discussed freely and at length in more than one country of the world. It is gratifying to know that in Great Britain, Canada and the United States the problem, difficult as it is, is being faced fairly and squarely by some medical and legal authorities as well as by mental hygienists.

Some idea of its magnitude may be obtained from the Report of the Mental Deficiency Committee in Great Britain, an account of which may be obtained in the *British Medical Journal*.* It is estimated therein, for example, that there are 300,000 defectives of all ages in England and Wales, and that institutional care is required for 64,000 of these, and special residential schools for 23,000 more. When we consider what is involved in this the situation is little short of appalling. Documentary evidence exists showing that to parents, one or both of whom

*I: 775, April 27th, 1929.

were feeble-minded, were born four or more children, all of them mentally feeble or actually imbecile. That such defectives contribute a large quota to our criminal population is well known. The history of the famous Jukes family, so fully studied by Dugdale, fully bears this out. It is estimated that the defectives in England and Wales are reproducing their kind to the tune of 2,500 a year. Every country in the world, including Canada, has the same problem.

What is to be done about it? Some thirty years ago Dr. W. Duncan McKim, in his book Heredity and Human Progress, advocated "a gentle and painless death" for those coming under this category of mental deficiency. Public opinion, and, indeed, medical opinion, is not ready for this Spartan-like policy. There seem to be only two other remedies—segregation and sterilization. It may be said at once that the former plan is enormously expensive, and worse than this, is ineffective.

The way the matter appeals to the legal mind can be seen in a paper by Lord Riddell which was read at a meeting of the Medico-Legal Society in London on April 25th of this year. Lord Riddell stated that the policy of segregation recommended by the Board of Control would involve a capital expenditure of £29,000,000 and an annual expenditure of £16,000,000. He asked whether the community could afford to spend so much on a section of the population obviously the most undesirable. This remedy is, of course, only palliative, for it does not strike at the root of the matter. Lord Riddell said "Unless we are careful we shall be eaten out of house and home by lunatics and mental deficients." He remarked, also, that mental defectives were far more prolific than the mentally sound, and that defective parents were apt to produce defective offspring, and further commented on the large number of defectives that were convicted of serious crime. Lord Riddell argued that the existing system is "incoherent and illogical," and that its effect is to return as many lunatics and mental defectives as possible to the outside world, providing them with free opportunity to breed more lunatics and defectives every year.

Medical men, with few exceptions, will agree that it would be better to stop the supply of defectives at the source rather than attempt to "cobble up" poor material, in the hope that it may become useful to the community. A thin veneer of educational and social accomplishments will not suffice to restrain inherent undesirable tendencies.

The alternative plan—sterilization—is that preferred by Lord Riddell. This procedure has been practised in California since 1909 on about six hundred defectives, with only three deaths, two of these being attributed to the anæsthetic employed. In one of the Swiss cantons a law has been passed requiring compulsory sterilization of those likely to produce offspring afflicted with incurable mental defects, and sterilization has been recommended by official committees of the New Zealand and Swedish legislatures. Also, a sterilization statute is now on the books in Alberta.

Any objections to the plan of sterilization are likely to be advanced under the sacred names of religion and freedom. However, we are living in a police age, and there is, in some respects, less freedom for the individual now than there ever was. Probably there are too many sumptuary laws, but there is always room for those that are well considered and are supported by public opinion. We interfere, for example, with personal freedom in matters of vaccination, quarantine, and the commission of crime. Surely, to bring into the world another individual grievously handicapped for the struggle for life, one who may in addition prove a menace to his fellows, is as much to be deprecated as murder. Nature herself copes with the situation by eliminating the unfit by the ruthless expedients of progressive degeneration and death, but while this is true of individuals, it may take many generations before a defective stock disappears and in the meantime other defective stocks are making their appearance. Unless something more is done than we are doing, we may expect, in these days of growing physical and mental stress, that the problem will become progressively more acute. This state of things is "aggravated," and we use the word designedly, by the advances made by preventive medicine, conservative surgery, and public health. We are, indeed, interfering with the normal operation of the, in

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one sense, beneficent, if yet ruthless, laws of Nature, and thus, with the best intentions in the world, are ensuring the "survival of the *unfit*."

It must be admitted that the problem is a most difficult one. If in time we all, legal, medical, and lay, come to agree that sterilization is the best solution of the difficulty, yet it remains for us to formulate a procedure that will be at once humane and effective. Safeguards are, indeed, necessary but should not be so rigid as to defeat our main purpose. Then, there is the question of *general unfitness*, whether mental, physical, or, as is so often the case, both. The line of demarcation between normality, so far as it relates to social adjustments and mental deficiency in its bearing on intellectual acquirement and the moral sense, is not always sharp. How far should we go? The answer is not yet, but the problem is becoming insistent and should engross our best thought and endeavour.

A.G.N.

THE HAZARD FROM X-RAY FILMS

THE appalling catastrophe at the Clinic Hospital, Cleveland, Ohio, in which one hundred and twenty-five persons were killed and upwards of one hundred more were placed in jeopardy of their lives, has called forth the sincere sympathy of all medical people and of those familiar with hospital work. Several times before accumulations of x-ray films have taken fire, but the situation has been handled without much difficulty, and the results have not been serious. The Cleveland disaster seems in some particulars to have been different. The fire and explosion came, like the proverbial "bolt from the blue," without warning; a great quantity of poisonous gases was liberated, which brought death to many of the patients, to some, the doctors and nurses at their posts, and even to the unsuspecting passer-by on the street, and the building was speedily reduced to ashes. Nothing just like it has happened before, and we may well hope that, with this lesson before us, nothing like it will ever happen again.

The first accounts of the disaster laid much stress on the presence of heavy brown fumes, which were attributed to bromine, and were regarded as the chief lethal agent. Photographic films are coated with bromide of silver, but it is quite unlikely that, in the circumstances, sufficient bromine would be liberated to cause danger. Those familiar with cellulose chemistry know, rather, that the brown fumes referred to were those of nitrogen tetroxide.

Film, as prepared for photographic purposes, falls into two general categories,—the inflammable and the non-inflammable. The former type is prepared from nitro-cellulose and various combinations of organic substances, including camphor and synthetic camphor. When it burns, or explodes, a number of gases are liberated, among them carbon monoxide and nitric oxide. Nitric oxide has great avidity for oxygen and speedily unites with it, to form nitrogen dioxide (NO_2) and nitrogen tetroxide (N_2O_4). These nitric oxides, apart from the question of asphyxiation, are highly poisonous, for they readily enter into combination with living cells and organic matter and form picric acid. The effect on the living organism is quick and profound, as coagulation of the tissues and of the blood is a result. It is noteworthy, too, that the results of poisoning with the various nitric oxides may be delayed, and after a period of some hours, or even days, during which the affected person appears to be recovering, a fatal result may supervene. The same thing was noted during the war after explosions of nitrocellulose and after poisoning with mustard gas.

The non-inflammable films do not contain the nitrogen groups, being "acetates" and not "nitrates." They are made by treating cotton with acetic anhydride and acetic acid. While they will burn they do so but slowly, and in the process do not liberate poisonous gases.

What can be done to prevent such occurrences in the future? Much, one would think. Those who are specially interested should read the rules and precautions suggested by Hobbs in the *Journal of the American Medical Association* (92:, 1763, May 25th, 1929). Without attempting to deal with

the subject exhaustively, a few points may be referred to, which suggest their own appropriate remedies. Fire directly applied to inflammable films has been the cause of trouble. In one case the hot ashes from a cigarette were dropped into a drawer-full of film. Sparks from various electric and x-ray apparatus may also constitute a source of danger.

The system of storage is important. Attention has, of course, been paid to this phase of the question in the past, but it is not improper to suggest that in many cases the nature of the hazards to which stored film may at times be subjected has not been fully appreciated. Special rooms and special safety appliances have been provided, but are these adequate? It is obvious that if a large number of films must be stored they should be divided among separate fire-proof rooms, or, better, separate buildings. Perhaps the storage rooms would be safer if underground. Fireproof, automatically closing, doors have been provided. It is questionable how much value these have. They would, presumably, if they really work at the critical moment, prevent fire from outside getting to the interior of the storage room, but would be of no avail in cases where combustion starts within. In one recent case, where trouble in a film storage room apparently developed over a period of weeks, resulting eventually in explosion, the cause was thought to be a defective steam-pipe that entered the room leading to slow decomposition of the film. Vents, also, have been provided, with the idea in mind that in the case of fire or explosion they will carry off the fumes. Also, sprinkler systems have been installed. How far are these likely to be effective? Some time ago the Eastman Kodak Company conducted some experiments in order to elucidate the problem. They stored inflammable film in concrete storage rooms provided with vents and a sprinkler system. It was found that, under the conditions of their experiment, the liberation of gases took place so quickly after the ignition of the film as to require a special modification of the sprinkler apparatus. Unless, in fact, the sprinkler system got to work not later than thirty seconds after the fire started it was of no use. Considering the relatively immense volume of gases liberated and the short space of time in which this liberation occurs, it may well be doubted whether the vents, as ordinarily provided, are sufficient. Closed doors, even if fireproof and automatic, would only make things worse, one would think, acting like the wadding to a gun charge.

Metal cases, securely locked, constructed to hold a relatively few films, would, however, doubtless, be of value.

But with all the precautions that may be devised and put into operation there remains the element of human fallibility. It would seem better to get right down to the root of the matter. Why not use non-inflammable film? It is objected that this is more expensive than the other. It is not likely that the increased expenditure on the film would equal the cost of providing adequate storage accommodation or of repairing the damage done by one serious fire. A second objection is that the non-inflammable film is not so delicate in its reproduction of detail as is the other. Possibly it could be improved in this particular. A third objection, that non-inflammable films are apt to curl, could certainly be surmounted. One other suggestion is that positives be printed from the film, which is then to be destroyed. Probably, these would last long enough for all practical purposes. In any case, the claims of humanity demand that a repetition of such a disaster should be rendered impossible. Expense should not enter into the question.

A.G.N.

RESEARCH BY A GENERAL PRACTITIONER

WE publish in this issue a paper by Dr. H. R. Clouston, which is of interest for more than one reason. It is the description of a deformity involving the hair and nails in a striking and characteristic manner, though not always in an equal degree. The deformity is clearly shown to be inheritable, but only within certain limits, and these, fortunately, tend to lessen its occurrence. For example, it never jumps a generation; if a child born of defective parentage happens to escape the blemish there is no likelihood

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of his posterity acquiring it, unless by a mating with another defective.

Furthermore, the disease is strictly confined to a French-Canadian stock (except where intermarriage with other races has taken place), and it is a stock which appears to have come from a part of France where cases still occur.

Dr. Clouston's paper should be consulted for the many other interesting points he brings out. One cannot but be struck with the abundance of detail which he has collected on his subject. He speaks of "unusual circumstances" giving him the opportunity to examine members of five generations—an experience which indeed does not come to many—but he has taken advantage of his experience to an extent which also is unusual. His investigations have been made in the middle of active general practice, and that cannot be described as conducive to the making of prolonged and exhaustive inquiries of scientific merit. The difficulties it presents can only be overcome by certain qualities of mind and character. Chief amongst these is an intellectual keenness which will not be dulled by continual small distractions—"a waking eye, a prying mind." How clearly is this evident in those who have contributed to our knowledge under like conditions of work; Harvey showed it, and Jenner, and Sir James Mackenzie. These men of course were giants, but the work we are now referring to will we think be admitted to have been carried out under circumstances no less disturbing to ripe reflection, than was theirs, and with results worthy of high commendation.

H.E.M.

Editorial Comments

THE CANADIAN RED CROSS IN 1928

The annual report of the Canadian Red Cross for 1928 is before us, and affords excellent reading. It gives a simple account of good work well done. We are all too apt to take the Red Cross for granted, and, so, are not as well informed as we should be about its activities. In a general way we know that it looks after ex-soldiers, hospital visiting and relief, and comforts for soldier-settlers; that, in conjunction with the Department of Soldiers Re-establishment, it trains those ex-soldiers who are in certain ways incapacitated, so that they may take some part, at least, in the general labour market; that it is ready for emergency service in cases of serious disaster. But, there are certain other phases of its work that seem to stand out as worthy of special note and commendation.

The Red Cross in 1928 operated 44 Outpost Hospitals, in an endeavour to meet the needs of frontier districts and pioneer settlements in the matter of nursing and hospital service. These hospitals are to be found in British Columbia, Saskatchewan, Manitoba, Ontario, and New Brunswick, and are well enough equipped to meet the requirements of various Provincial Hospital Acts. Accordingly, the Governments of Manitoba and Ontario have given them special grants for maintenance. The following figures are eloquent and need no comment. Attached to these 44 hospitals, which have 302 beds, are 82 nurses. During 1928, there were 4,367 indoor patients and 9,896 outdoor patients; there were 1,557 surgical operations. Since their establishment in 1920 no less than 66,649 patients have received treatment in these Outposts. Also, in 1928, 3,964 school children were inspected.

Another activity, of great moment, is the so-called Port Nurseries, which are located at points where immigrants enter the country. These newcomers are looked after according to their needs, are helped on their way, and an efficient "follow-up" system ensures that they will be taken in hand by representatives of the Red Cross when they reach their destinations. It is hard to overestimate the value of this, not only in a material way but in its sentimental aspect. The newcomers to our land are made to feel that they are welcome and that they need not lack the helping-hand.

Child welfare, home nursing, home hygiene, social service generally, and the distribution of health leaflets, all enlist the good offices of the Red Cross, but by no means cover the full range of its activities.

We have, then, in the Red Cross one of the most potent agencies for good in our country, a valuable ally of the medical profession and the various health agencies, an institution that deserves all the praise that we can give it and the helpful sympathy of the whole community.

A.G.N.

ADMONITIONS TO THE MEDICAL PROFESSION

The following extracts are taken from the retiring President's address to the Vancouver Medical Association this year.* The selection has been made with the idea of showing that this Association possesses a very healthy spirit of discontent, and a desire to strive for the highest aims in medicine, both of which may well be emulated by every other Association.

"It has been the custom of my predecessors in this office in the past, upon retiring, to leave with the members of this Association some product of their year of observation and experience, and as we look back, one cannot help but be impressed by the wisdom and importance of the ideals and objectives which have from time to time been proposed. But there is a factor which, in our retrospection, must be very evident and which yearly becomes to this Association more and more important and that is that few, practically none, of the suggestions or objectives that have been offered by the various retiring Presidents, have ever been acted upon. Now what does this imply? The inactivity of this Association in these matters does not in any way detract from the importance of the various proposals that have been made. To me, after a year of activity and observation as your President, it brings out very clearly what I have come to regard as the greatest handicap to this Association and to the progress of medicine in this province, the lack of co-operation and concerted action among the profession as a whole.

We have had numerous instances in the past, in what might be termed the larger affairs of medical practice in this province, in which failure of the profession to present a united front has reacted unfavourably. We are all familiar with conditions which have arisen locally during the past few years, conditions which affect this Association and at the same time affect you and me, in which the indifference or inactivity of the profession left us with our difficulties unsolved, with a diminished amount of self respect, and our so-called prestige as a learned profession more or less submerged.

But you may ask, wherein have we failed, either as an Association or as a profession? Permit me in rebuttal to ask wherein we have succeeded, and if not, why? Let us come down, for the purposes of self examination, to some of our local problems and analyze our conduct. What has been our united action for instance on the policy of vaccination, of quack healing by diet, religion and God knows what all? Can the profession calmly ignore the situation which has arisen in this city with regard to hospital accommodation? Why is it possible for any member or members of a hospital board to imply, as has been done here recently, that the medical profession has offered no acceptable proposition for the solution of existing difficulties.

It is not the province of this Association, or of the profession, to formulate policies for the direction of public utilities or civic departments, but when those policies are inimical to the welfare of the profession and of the public then our duty is clear, and we should be prepared to go on record as medical men and as citizens in demanding that we have at least a recognized voice in seeking what we know to be in the best interests of the community." H.E.M.

* *Bull. of Vancouver Med. Assoc.*, June 1929.

THE GARTON PRIZE AND MEDAL

The British Empire Cancer Campaign, of which H. M. The King is Patron, and H. R. H. the Duke of York is President, has, through its Grand Council, instituted a valuable prize and medal with the object of promoting investigation into the nature, causes, prevention, and treatment of cancer. The prize, of which we have received particulars direct from the Campaign, is well worth winning, as it consists of a Medal and a Honorarium of £500. It should be noticed that the prize and medal are open for competition to British subjects, domiciled in the Empire at large. The Grand Council are hopeful that there will be a number of competitors from Canada. Full particulars will be found elsewhere in this *Journal*, under the heading of "News—British Empire." The subject of the essay to be submitted is "The Early Diagnosis of Cancer." As the dissertations need not be delivered to the Honorary Secretary of the British Empire Cancer Campaign until December 31st., 1931, ample time is allowed for a very full study of this important subject. There are, doubtless, many in Canada quite competent to undertake such a piece of work, and it is highly desirable, from all standpoints, that Canadian medical men should be heard from in this particular. The study of cancer, especially in the matter of prevention and early diagnosis, which means limitation of its ravages, demands the best thought of our clinical and research workers.

A.G.N.

DR. BLACKADER

We have to note with regret that while this issue of the *Journal* was in preparation, Dr. Blackader was rather seriously ill. However, it is a matter of great gratification to all of his associates and friends to know that he is now slowly improving. As we go to press we learn that convalescence has set in. Although his progress is likely to be slow, his ultimate recovery to his usual vigour seems, happily, assured.

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Special Articles

The Huxley Lecture

ON

THE NATURE OF DISEASE*

DELIVERED AT THE UNIVERSITY OF BIRMINGHAM ON FEBRUARY 12TH,

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Health is the state of body and mind resulting from the successful adaptation of the living organism to external and internal factors. Disease (want of ease), which is a departure from this condition of equilibrium or a want of harmony, has been often defined, but the definitions have not given universal satisfaction, and, as Mercier pointed out, it is noteworthy that the fundamental concepts of other callings, such as the law, engineering, finance, and war, are also hard to define, and that this process of specification, so to speak, is not arrived at until late in their history, though their practical efficiency has not been thereby affected. Definitions are a weariness of the flesh, but it may be well to quote one out of many—that formulated by the late J. G. Adami in 1910—as it contrasts with that of health and gives a good indication of the potential variability in the reaction we call disease; it runs as follows, "Disease is a process or succession of disturbances induced by any agent which disturbs the normal activities of the organism as a whole or of its constituent parts." Into another definition—that "disease is a failure of adaptation both to conditions without the organism and within" (W. A. White) — may perhaps be read two additional points: first, that the responsible cause may be inside the body, quite independent of any extraneous factor—for example, some congenital structural defect or a functional aberration, such as "the inborn errors of metabolism" or "chemical malformations" described by Archibald Garrod; and secondly, that in the process of adaptation not only may the normal reserve power of the living body be called upon, but that in comparatively slowly developing morbid changes, such as valvular disease of the heart and narrowing of canals such as the intestine, compensatory or adaptive processes, secondary to, but keeping pace (at any rate for a time) with the morbid change, may bring about such an adjustment that there is absolute freedom from symptoms. Thus destruction of one kidney may be compensated by hypertrophy of the other, and destruction of a portion of the liver by regeneration in the remainder. Symptoms, and disease in the sense to be explained directly, will only occur when these compensatory muscular and glandular hypertrophies fail; the hitherto latent morbid change then gives rise to functional disorder—that is, symptoms. This "margin of safety" or compensatory mechanism must be borne in mind as a difficulty in attaining the desired knowledge from the study, so much insisted upon by the late James Mackenzie, of the earliest departures from health; for by the time symptoms appear the morbid changes may be well established, and the manifestations might then be wrongly regarded as functional changes leading up to, and responsible for, the structural alterations. . .

WHAT IS A DISEASE?

To consider now in rather more detail the question, What is a disease? Primitive man is superstitious and has always regarded disease and accident as due to the action of an offended or malicious deity, of the dead, or to the machinations of an enemy, and from the last belief was derived the idea of magic and witchcraft. Disease became regarded as a definite invasion of the body, as by demoniac possession or by a more material substance, which must be allowed an exit, as by the trephining in Neolithic times, or expelled, in order to obtain a cure. This notion that the cause of disease was the presence in the body of a foreign spirit or of some concrete substance with an extracorporeal existence or phase obviously expresses, though in less scientific terms, the more modern knowledge of parasitic and bacterial infection, and so far may be regarded as prophetically rational. To discover the cause of the disease is the aim of diagnosis, and so keen is the appreciation of this important principle that there is still a tendency to regard the cause as synonymous with its results. A not unnatural outcome of the belief that disease was a disorder with an objective reality and due to some harmful substance in the patient's body was the materialization of diseases on the lines of botanical and zoological classifications, and to arrange them in genera and species after the successful plan initiated by Linnaeus. For this view Thomas Sydenham (1624-1689) — the British Hippocrates— was in part responsible. . . . . Even now diseases are spoken

* Reprinted (somewhat abridged), from the *Brit. M. J.* 1: 281, Feb. 16, 1929.

of, though perhaps not seriously so visualized, as quite definite things; and it may be asked, What practical difference does it make if they are? A partial answer is that this would logically justify a rule-of-thumb practice of treating the disease rather than the sufferer. In this age of mass production and machine-made standardization, when, for example, motor cars are so alike that their disorders are of a stereotyped character, it is particularly important to insist on the obvious—namely, that human beings are made, not from one mould, but, individually, differing widely in their make-up and power of response. In illness we all desire to be treated as a special problem, not one of a crowd of Robots, and accordingly trust our medical attendants not only for their technical knowledge but also for their ability of applying it to our particular needs. Every illness is the reaction of the body and mind of the patient to some factor which in its turn may be simple or complicated; the reactions of living matter are far from constant, and those of man become more complex as he moves from childhood and the simple life of the country to maturity and the whirlpools of modern civilization. Thus a startling or offensive announcement may leave one man untouched because he is deaf; another, phlegmatic or a philospher, may receive it in silence; whereas in a third an emotional explosion follows. This variation in the response is most dramatically seen in idiosyncrasies, such as asthma and hay fever, as the result of inhalation of horse emanations or of pollens, or of abdominal and cutaneous symptoms, as the result of eating a few specks of parsley—an example of which in four generations of a family has just been brought to my notice. . . . . .

But to continue consideration of the question what is meant by a disease. As long ago as 300 B.C. Erasistratus of the Alexandrian School of Medicine regarded it as a perversion of health, of the normal processes, and not a condition contrary or foreign to biological nature; but this was forgotten. In modern times Claude Bernard (1854) spoke of disease as a physiological reaction in altered circumstances, and Clifford Allbutt, since 1871, followed by C. A. Mercier and F. G. Crookshank, pleaded for clear thinking and the recognition that a disease is not a definite thing, like a plant, but a mental abstraction or concept of the reactions of a living organism in certain circumstances. The groups of reactions form distinct pictures in the mind and are labelled by the name of a disease.

WHAT A DISEASE IS NOT

Before going further it may clear the ground to consider what a disease is not; although a patient is ordinarily spoken of as, say, a case of cancer of the stomach, the malignant growth is not the disease; for disease is the reaction of the *living* body in the form of functional disorders correlated with a cause, whereas the cancerous stomach persists after death. Disease, like health, is inseparable from life, and its nature and causation would no doubt be differently interpreted by those holding the vitalistic and the mechanistic explanations of life.* Further, gross structural change may exist, and yet, as the result of compensatory changes, not cause any disturbance of function or symptoms of disease; conversely, changes such as can at present be recognized by the naked eye and the microscope may be absent in disease, although it is reasonable to imagine that some alterations occur, just as they must in other forms of vital activity. Symptoms, though the manifestations of the reaction and so part of a disease, do not of themselves constitute a definite disease, for they may be due to several causes rather than to one. In the case of infective diseases the exciting cause is invasion of the body by micro-organisms, the toxins of which set up changes in the body and so the resulting reaction called the disease. But the manifestations of the reaction may be regarded as of two kinds and as possibly due to two mechanisms: (1) as Boycott points out, the general symptoms, such as malaise, fever, and headache, common to most infections, are mainly due to substances liberated from the injured cells of the tissues; (2) the manifestations specially characteristic, and so diagnostic of certain infective agents, may be due more to specific bacterial toxins—for example, tetanus toxin, acting directly on the body tissues; or conceivably, as Sidney Martin argued years ago, the bacteria may produce a ferment which acts on the cells of the body so that they manufacture a specific poisonous substance. *Symptoms* have in the past been regarded as diseases—for example, dropsy—and even in our own day it has become recognized that some conditions, such as epilepsy, are collections of symptoms due to different factors; hence it is more correct to speak of the epilepsies rather than of epilepsy. To collections of symptoms occurring in conjunction sufficiently often to render their correlation recognized, but without any constant single underlying cause, the names "syndrome" and "symptom-complex" have been applied; the distinction between a syndrome and a disease, as the words are usually employed, is to be found in their etiology. A distinction has also been drawn between "syndrome," or a collection of symptoms with a functional or anatomical basis in the body, and the more modern word

* Augusta Gaskell, who argues that life is due to the permeation by an immaterial system (derived from protons and electrons) of a material atomic system composed of chemical units, believes that the phenomena of cancer "constitute a striking proof" of her hypothesis.

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"symptom-complex,"† which implies a series of clinical signs and symptoms without any consideration of their relationship to a lesion or functional disorder of an organ, or a purely clinical coincidence (Cawadias). The word "symptom-complex," which has not escaped criticism as a barbaric mixture of the two classical languages, was, according to the *Oxford Dictionary*, first used in this country in 1897. As Cawadias points out, diseases were really symptom-complexes from Hippocratic times to the era of the anatomico-clinical school of Paris and of Claude Bernard and Johannes Müller (1801-58), when syndromes formed the basis of nosological classification. The term "clinical entity" is often used as synonymous with syndrome or symptom-complex to describe a definite collection of morbid manifestations which may be due to more than one distinct cause, and so is useful as long as the causation is uncertain. It thus avoids the definite statement that the group of symptoms is specific—namely, due to one factor—in other words, a disease in the proper sense of that word. Objection has been raised, especially by the late Sir Clifford Allbutt, to "clinical entity" as a descriptive title for a morbid condition, because it tends to perpetuate the material conception of something analogous to demoniac possession. But though this interpretation may be literally justified, it is not, rightly or wrongly, the meaning widely attached to the phrase.

To sum up, a disease is not a poison, a parasite, an ulcer, or a tumour, for these are causes; it is not a symptom, such as pain; but it is the mental picture of the manifest reactions of a living organism in response to harmful factors, whether derived from outside the body or arising internally.

Transitions Between Health and Disease

As disease is primarily a physiological reaction to stimulating or depressing factors of a harmful character, and a mental concept or "construct" summarizing the events which then occur, it is clear that the line dividing health and the defensive powers of the body from disease may be very indefinite. Thus if the defensive powers are high the necessary reaction may be so short and slight as to be unaccompanied by any symptoms, and the individual is unconscious of the inward struggle that has taken place; this process is indeed constantly in action, and constitutes the resistance of a healthy individual. Truly we stand in jeopardy every hour. In other instances the reaction is more marked, but so rapidly successful that the disease is aborted; it is in cases in which the reaction is prolonged or eventually fails in its purpose that disease is more decidedly present. The leucocytosis in the early stage of infection may be compared with the reactive leucocytic increase during digestion due to absorption of food. Inflammation is an entirely useful and innocent process in the healing of an aseptic wound; indeed, it comes within the four corners of Frédéric's canon of physiology—namely, that "a living being is adjusted in such manner that each perturbing influence provokes to activity a compensating apparatus which brings about neutralization and repair of the damage." No one would call this a disease, but such an inflammatory reaction may gradually become a disease; thus local peritonitis producing adhesions by shutting off an infective focus is a protective or curative process; but general peritonitis is a reaction which so often fails that the causal infection is fatal. Here it may perhaps be mentioned that somewhat similar transitions are seen in diseases which vary in the number of the symptoms; when, instead of all the symptoms recognized as making up the mental concept, a few only are present, the disease is spoken of as larval or "fruste"; this may be a question of time, the reaction terminating before the initial manifestations are supplemented by those necessary to complete the recognized clinical picture.

With regard to the nature of the exact vital changes which occur in disease, apart from the comparatively gross alterations revealed by the microscope, there is much to learn. The recent advances of knowledge in connection with the constitution of the atom and the electron hold out promises of possibilities the extent of which it is difficult to forecast. The application of physical chemistry to medicine is clearly of the greatest importance, but is so beset with difficulties that attempts to do so deserve sympathetic encouragement, even though they may not as yet carry conviction or be confirmed.

Evolution of Diseases

As diseases cannot, strictly speaking, be regarded as definite "things," it might seem illogical to speak of their evolution, and it has recently been stated that a serious attempt has not yet been made to apply the doctrine of evolution to the natural history of disease (Gill). No one, however, can fail to be interested in the changes that diseases have shown in the course of time, and in the forms that appear to be new and produced in certain circumstances; as long ago as 1890 an interesting work on *Evolution and Disease* by Sir John Bland-Sutton appeared. Some sort of an explanation of the existence of

† Mercier in 1917 poured scorn on "the terms syndrome, symptom-complex, and other monstrosities made in Germany" as "on a par with the exploit of the servant girl who calls a brilliant flash of lightning 'chronic' or the alienist who calls primary dementia 'dementia praecox'." But the word (*συνδρομή*) was employed by the Empiric School of Alexandria, 300 B.C., to describe a series of symptoms (Crookshank, Cawadias), and was adopted by Galen.

disease may perhaps be suggested, as a side issue after reading Professor A. E. Boycott's recent presidential address to the Section of Pathology of the Royal Society of Medicine; in it the capacity of self-repair is emphasized as one of the main characters of living organisms, but it is pointed out that this faculty is not, or only in a very slight degree, possessed by individual unicellular organisms. Now little or nothing, if the problematic nature of bacteriophage be excluded, is known about the diseases of unicellular organisms. Diseases and the power of self-repair have both become recognizable as the scale of animal life is traced upwards, and it is conceivable that they are closely allied forms of reaction to stimuli—the one (self-repair) successful, the other (diseases) more or less ineffective. *Diseases are not rigid types, but the more or less unsuccessful reactions to harmful factors, most commonly environmental;* it follows, therefore, that they show considerable variations in their manifestations, especially as the reaction depends on two variable factors—the characters of (1) the host or the "soil," and (2) the unfavourable environmental factor, the "seed."

CHANGES ASSOCIATED WITH CIVILIZATION

1. In the course of his progress from primitive to civilized life man has undergone many changes, and his bodily reactions to external factors, and therefore his diseases, must, like the forms of his virtues and vices, have altered in a corresponding degree, for consideration of his surroundings would suggest that the further man moves from his savage state the more complex will the character of his disorders become. How much a change of type of disease has occurred it is difficult accurately to estimate, for the slow advances of medical knowledge might easily make it appear that the evolution of disease has been more recent and extensive than is really true. . . . . .

As both nations and their constituent individuals differ in their "constitution" or make-up, partly from heredity and partly from the result of the long-continued influence of their surroundings, their powers of resistance to disease must vary in a corresponding degree. Under certain conditions, such as those of war, famine, and epidemics — for example, of influenza—the vitality of a nation may be so much impaired that factors ordinarily comparatively harmless are enabled to act at an advantage, so that other diseases become frequent. Thus secondary epidemics or diseases which are not in evidence at other times may become prevalent. This sequence may have suggested to Sydenham his conception of "epidemic constitutions"—that is, that during the period of a dominant epidemic other diseases tend to share the characters of that infection. There are, indeed, close analogies between the factors modifying diseases in the course of time and those which appear to be responsible for the outbreaks of epidemics. The diminished resistance of a nation due to the depressing factors—material and mental—inherent in war, destitution, and unemployment, would probably allow micro-organisms previously of comparatively low pathogenic power to become active, and thus help to explain the increased frequency of streptococcal diseases, especially subacute and chronic bacterial endocarditis, and of pernicious anæmia since the great war.

Hereditary deficiency in resistance of the tissues, or of one particular tissue, of races or of individuals may lead to the incidence of particular diseases or to certain forms of those diseases; so that a nervous system weak from congenital defects will favour the attack of an infection, such as that of influenza, on that part of the body—a problem recently discussed by H. P. Newsholme. Hereditary diatheses or morbid proclivities in certain races of mankind lead to the occurrence of special diseases among them; this is best seen in the Jewish nation, which provides most of the cases of amaurotic family idiocy and thrombo-angiitis obliterans. . . . . .

INFLUENCE OF ENVIRONMENT

2 .Environment influences disease in many ways. It is so clear that climate is a most potent factor that the effects of heat and cold, humidity, absence of sunlight, need not be laboured: in hot countries the presence of special parasites, particularly protozoa, such as the malarial and amœbic organisms, and their carriers or vectors, such as mosquitos, are responsible for the important group of the tropical diseases. On the other hand, an environment, such as that of isolated races, free from some common infections, such as tuberculosis and measles, leaves the inhabitants a virgin soil; but should the infections be introduced, the incidence and mortality of the diseases tend to be very high. This is not so much due to want of innate racial resistance, as might perhaps be thought, but to the widespread absence of any previous individual infection and acquired immunity, or, as Krause persuasively argues, to concomitant changes in the manner of life, approaching those of the more artificial complexities of civilization which lead to physical degeneration of the pure stock of primitive peoples.

Environmental factors are more obviously powerful than heredity in the production of new forms of disease; this was shown, particularly during the great war, by occupational diseases in which the worker is exposed to some poisonous agent, such as trinitrotoluene or tetrachlorethane, in the manufacture of munitions and the varnishing of aeroplane wings with "dope.". . . . . .Another way in

which environment brings about disease is by privation of some essential accessory food factor. Study of the "deficiency diseases" and the discovery of vitamins have opened out the path to the prevention of diseases such as rickets, beri-beri, scurvy, and dental caries; and recently vitamin E has been shown to be essential to fertility, its absence being responsible for sterility.

Among the environmental factors bacteria and protozoa are responsible for the majority of diseases. As they are at the base of the scale of living organisms it may be assumed that they are more prone than the higher animals and man to variation and mutation as the result of influences such as food and temperature; and that, at first purely saprophytic, some of them in course of time become parasitic and pathogenic for man.

Differences in the clinical manifestations of enteric (typhoid and paratyphoid) fever, dysentery, cerebro-spinal fever, and to some extent of pneumonia, have been proved by bacteriology to result from infection with different types of the typhoid-paratyphoid group, dysentery bacilli (Shiga and Flexner), meningococci, and pneumococci. This distinction of the type of the infective organism is, of course, of far more than academic interest, for it enables immunological treatment to be scientifically and successfully employed. Further evolution of bacterial variations, such as at some time in the past may have resulted in the formation of paratyphoid from typhoid bacilli, might lead to the production of new forms of disease; at the present time it may well be that there are many such bacterial divisions of disease as yet not separated from each other clinically and so still included under a single nosological label. Aberrant forms of infectious diseases would suggest the existence of variations in the causal agent; but here the possibility that mixed infections play a complicating part must be borne in mind. Just as diseases may die out, such as "the sweating sickness" in England in the fifteenth century, so many new diseases arise; syphilis, it seems safe to assume, did not exist in ancient Rome, as such a careful observer as Galen did not describe it or its nervous manifestations tabes dorsalis and general paralysis of the insane. . . . . .Among animals hog cholera, unknown before the seventies of the last century, when it appeared in the United States of North America, is an example in support of the view that micro-organisms can and do undergo evolution from a harmless saprophytic condition to one of pathogenic activity. . . .

THE SIGNIFICANCE OF DISEASE

To most minds disease is included in the mystery of evil and considered an unmitigated calamity, and in the past has been regarded as part of a system of rewards and punishments. As the existence of a single unicellular organism normally terminates by division into two similar but rejuvenated individuals, these simple cells have been described as immortal, whereas in the higher grades of living creatures death has been regarded as an acquired character, associated with differentiation of the constituent cells and a resulting highly complex mechanism, and as an adaptation advantageous to the race (Weismann); this last—academic—conclusion has been criticized as probably the most perverse extension ever made of the theory of natural selection (Pearl). Death comes either naturally by a gradual exhaustion of the innate endurance and vigour, or unnaturally from accident or disease, which are therefore short cuts to death. From a biological point of view diseases have been regarded as beneficial inasmuch as they weed out the physical weaklings and so make for the survival of the fittest and the improvement of the race. . . . . .It is unnecessary to labour the evils brought by disease, but it may be well to glance at the other side of the shield and, though to some this may at first sight seem fanciful, to explore the possibility that disease may have good effects—a contention vigorously supported from a technical standpoint nearly a quarter of a century ago by the late Frederick Treves.

As good may come out of evil, it may be worth while to summarize briefly the conceivable ways in which disease, on account of associated conditions and of the opposing forces thus brought into play, may be regarded as exerting a beneficial effect. This problem may be reviewed from two aspects: (1) general and sociological, and (2) that of the individual.

BENEFICIAL EFFECTS OF DISEASE IN GENERAL

It is not always easy or indeed possible to draw a hard-and-fast line between the normal or healthy on the one hand, and the abnormal, which may tend to produce disease or be in itself morbid, on the other hand. There may, in fact, be innocent as well as malignant abnormalities. There is a borderland between health, which Allbutt (1924) spoke of as an oscillation about an ideal axis, and disease, and it has been said that they are both relative terms and that there are various states of health and of disease (W. A. White).

The racial characteristics which, according to Keith, in part depend on the degree of activity of the endocrine glands, may, when exaggerated, become definitely morbid and cause disability. Thus in this country the condition of Mongolian idiocy, first described in 1866 by Langdon Down, the causation of which, though uncertain, may possibly be due to a disturbance of the endocrine balance (Clark, indeed, ascribes it to fœtal exophthalmic goitre), re-

produces some of the facial characters of the Mongolian race. . . . .The occurrence of variations or, more strictly, of "sports" plays a part in the evolution of the race, and among these departures from the average the line of demarcation may be very thin between those exerting a beneficial influence and those definitely morbid. This is familiar in Dryden's lines:

> "Great wits are sure to madness near allied,
> And thin partitions do their bounds divide,"

and as regards this particular example it has been shown by the late Sir Frederick Mott and others, from a study of many pedigrees, how real this association is, and that environment and factors so obscure that in our ignorance they are called chance determine whether this inborn tendency will land the individual in the seats of the mighty, a prison, or a mental hospital.

The variations that are responsible for the evolution of the race are accompanied by others that facilitate disease, and though the latter cannot of themselves be regarded as useful, their occurrence is so commonly associated with that of those making for improvement that they may be regarded as a necessary accompaniment.

Genius and outstanding ability, though often and easily confused, are distinct; ability is, as Galton showed sixty years ago, largely hereditary, and may be associated with a family history of mental instability or defect. But, as compared with ability, genius is a finer and extreme development of the imagination and power of correlation, and may extend out of the abnormal into the pathological. The association of genius with disease of the mind and body has no doubt been exaggerated by the statement that a genius is hardly every healthy; there are, however, abundant examples to support the contention of Lombroso and others that genius is often closely related not only with criminality and insanity but with other morbid conditions of the nervous system; this combination may occur in the same person, or the association may be shown by evidence of the neuropathic element in the genius's family tree. In the latter instance the genius or specially gifted individual comes of a neuropathic stock, though not himself necessarily degenerate. Enough has been said to show that genius and mental instability may be regarded as variations from the normal mentality. Their morbid manifestations may occur at different times in the same person, periods of definite insanity supervening and passing off; or insanity when it supervenes may close the career.

Geniuses, being usually highly strung, are certainly not immune to common ailments. While disease damages and eventually may destroy the body of the gifted individual, it must colour the mental attitude during the progress. While the usual effect of poisons is necessarily deleterious, some of them, especially in the highly sensitive and those with an idiosyncrasy, may in the early stages, when their irritant effect is predominant, exert a stimulating effect. Alcohol, opium, and morphine, as shown by not a few examples, have been the means by which a genius has been helped to deliver his inspired message. Similarly it has been thought that the toxins of disease may so act on the brain as to lead to the production of masterpieces instead of the more frequent nightmares and delirium. Many literary giants have naturally been tuberculous, and it is an obvious suggestion that their eminence may, in greater or less degree, have been due to, rather than in spite of, their infection. It has also been thought that syphilitic toxæmia played a part in the increased output of brilliant work shortly before its destructive triumph over men like Guy de Maupassant, Friedrich Nietzsche, Heinrich Heine, C. P. Baudelaire, and Paul Verlaine. The occurrence in Nietzsche's *Ecce Homo* of chapters headed "Why I am so clever" and "Why do I write such good books?" certainly suggests that he was already in the stage of exaltation of general paralysis of the insane.

It has been argued that, like alcohol and morphine, the bacterial poisons are responsible for striking ideas and conceptions by paralysing the mechanism normally blocking the external manifestations of an underlying creative power or personality (Jacobson). It is tempting to speculate on the correlation of various organic diseases with the characters of the literary and artistic products of the sufferers, and how far any special trait or tone of expression can be regarded as related to a particular disease. Did the hopeful spirit—the *spes phthisica*—account for the inspiration of some victims of pulmonary tuberculosis, such as Keats, Laurence Sterne, Emily Brontë, and Elizabeth Barrett Browning? There is some evidence from the *Vailima Letters* that when Robert Louis Stevenson's health improved his literary work deteriorated, and this has been explained by the absence of a toxæmic influence. In other instances, such as Francis Thompson (1859-1907), author of *The Hound of Heaven,* and Thomas De Quincey, tuberculosis of the lungs has been complicated by alcoholism or opium addiction; and then, as Jeannette Marks says, the question arises of "germs and genius" or "drugs and genius." How far did dyspepsia or, as G. M. Gould insisted, eye-strain, guide Thomas Carlyle's mordant pen, and to what extent was Ménière's syndrome, from which Jonathan Swift probably suffered, responsible for his savage wit?

In some rather special instances an individual's disease has been the means of greatly

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benefiting his fellow sufferers, as it has made him monstrous kind in the practical sense of providing for their well-being and care; thus Sir Arthur Pearson's (1866-1921) loss of sight was the salvation of the blind in St. Dunstan's, where they were taught not only to earn their living but to bear their cross courageously and cheerfully. Medical men, themselves stricken, have worked for the relief of those with whom they can so fully sympathize: E. L. Trudeau (1848-1918) utilized his own long fight against tuberculosis to promote the open-air treatment of that disease in North America; and it has been said of him that perhaps nothing in the whole field of medicine in the past fifty years in America has done so much directly or indirectly to relieve suffering and extend the years of usefulness of so many people as the principle which Trudeau laid down at Saranac Lake (J. A. Myers). Another example is Mr. Clifford Beers, who, having suffered for years from a severe psychosis, founded the National Committee for Mental Hygiene in the United States.

In his pathetically charming *Confessio Medici* the late Stephen Paget (1855-1926), who suffered much and greatly loved his fellow men, wrote, "You cannot be a perfect doctor till you have been a patient; you cannot be a perfect surgeon till you have enjoyed" (and he proceeds to justify the somewhat unexpected verb) "in your own person some surgical experience." Many examples could be given of medical men who, as the result of their own sufferings, have been able to throw light on the nature, prevention, and cure or alleviation of their own particular cross.

Pain, one of the commonest manifestations of disease and useful as a warning of its presence, may, as James Hinton (1822-1875) the mystic argued, have uses that we know not of, possibly an unconscious though effective martyrdom for others. In his *Book of the Sorrowful* Hinton was mainly concerned with mental anguish, but with regard to physical pain it may also be wise to admit that there are more things than are dreamt of in our philosophy. Professor Emery Barnes reminds us that "from St. Paul downwards through the ages some of the greatest Saints of God have believed that their bodily sufferings or their bodily weakness has been of immense value in training the spirit."

Lastly, disease, which usually exerts an evil influence on the history of nations, may protect one of two hostile armies from the other by rendering advance and successful invasion impracticable, or open the way to occupation of a new land — for example, the "providential" pestilence among the aborigines of Massachusetts Bay (1616-20) which enabled the first Pilgrim Fathers to take possession of the land in safety (Krause).

BENEFICIAL EFFECTS FOR THE INDIVIDUAL

A disease may do good by limiting its victim's activities in certain directions, such as social success or athletic prowess, and so leading him to concentrate his energy and powers on some specialized branch of intellectual work; thus by way of compensation he makes good, or achieves even greater success than he would have thought of attempting when unrestricted in his choice of a life's work. Invalidism necessarily restricts vicious self-indulgence and excess in satisfying the lusts of the flesh, and so may protect against the risk of other diseases to which the vigorous are, as a result of their rude health, more prone to expose themselves. This mode of protection is analogous to that probably responsible for the great longevity of women as compared with men.

There are other ways in which disease is a blessing, though perhaps in disguise; the onset of a trivial ailment or the detection of the early signs of disease without symptoms, such as are discovered at a routine examination for life assurance, may so impress the individual that he amends his manner of life, greatly to his future advantage. This warning mechanism was well expressed in the title of Sir William Osler's paper on "The advantages of a trace of albumin and a few tube casts in the urine of certain men above 50 years of age." Another example is the advantage of a raised blood pressure detected in its initial stages, provided steps are duly taken to prevent a further rise which would in time lead to generalized arterio-sclerosis and perhaps granular (arterio-sclerotic) kidneys. . . . .

An acute disease may cure a chronic affection; thus pneumonia may, for the time being at any rate, abolish the movements of chorea, or remove a skin disease of long standing; whooping-cough has long been thought to be relieved by vaccination, and has been known to be benefited by an attack of urticaria (Bury). The influence of an acute infection on a chronic one is probably analogous to the effect of protein shock therapy, in which the injection of a "foreign" protein into the blood stream sets up an acute reaction which in some way increases the protective mechanism against infection; for example, injection of peptone may be followed by much improvement in chronic arthritis. Just as many acute fevers leave behind them immunity for the rest of life, so a modified form of the disease or an abortive attack, which may escape notice at the time, protects the individual from a recurrence of the disease. This is well shown in vaccination against small-pox, and by the observation that people who have had the present mild form of small-pox, sometimes called alastrim and para-small-pox, do not contract the disease itself. Many forms of treatment act by stimulating or supplying the reaction and defensive powers of the patient necessary to repair damage or overcome infection; this was the rationale of Almroth

Wright's vaccine therapy, and empirically the method has been employed for ages. . . . .

THE RELATION OF THE NATURE OF DISEASE TO ITS PREVENTION

Lastly, with regard to the practical bearing of the nature of disease; the ideal of Medicine is the prevention of disease, curative treatment being really a tacit admission of failure in this respect. For the prevention of disease knowledge of its causation and nature is obviously essential. The two great factors in the causation of disease are heredity and environment. Heredity of actual infective disease occurs in only a few instances; but structural and functional defects, especially in the vital resistance, of the body are common and important. Environmental influences cover a wide field, from the gross factors of deficient food, slum dwellings, and general misery, to the ultramicroscopic viruses of infective disease. The preventive measures and remedies, therefore, are correspondingly various. It is unnecessary to refer to the desirability of correcting the economic factors of poverty resulting in unhygienic surroundings, overcrowding, and deficient and bad food and drink; but a word may be said about the importance of universal health education as a means of preventing disease and so preserving the well-being of the nation. The recognition of the need for intellectual education is a duty recognized much earlier by the Government, for it is only since the war, when the Ministry of Health was established, that health education of the masses has really gone ahead. Preventive medicine is every man's business, for it is the active response to the instinct of self-preservation. . . . . .

About the fundamental subject of an accurate knowledge of the causation of disease, on which preventive medicine is based, there is yet much to learn. As Sir George Newman has pointed out, it is extraordinary what contributions to medicine have in the past been made by scientific men who were not members of the medical profession. The debt of medicine to the more exact sciences mounts up much more rapidly and is much more in evidence now than ever before, and it is obvious that there should therefore be the closest possible association and correlation between the scientific workers in laboratories, where discoveries are made and tested, and the clinicians in the wards of hospitals, where the practical application of new knowledge may lead to fresh advances in the prevention as well as the cure of disease. With the specialization inevitable from the enormous advance of knowledge there is an unfortunate tendency for these two classes of workers to plough their own furrows; guidance from men of pure science is of the greatest value in the discovery of the causes and nature of disease; for physics and chemistry, biochemistry, physiology, and pathology touch, overlap, and interlace with each other, and human biology is a good synonym for medicine. To facilitate this desired association much can be done by the plan of having the various science laboratories in the same building or all concentrated together; the physiological, biochemical, anatomical, and pathological departments close to and communicating with the hospital, just as the physics department is or should be a near neighbour of the engineering laboratory. The University should have control of the hospital as well as of the laboratories—a conception not perhaps yet widely accepted.

Men and Books

"DOCTOR JAMES BARRY"

BY RIDLEY MACKENZIE, M.D.

Montreal

Much interest has lately been aroused in England in the masquerading of women as men, by the case of Mrs. Smith. This woman posed for many years as "Colonel Barker." She is at the time of writing undergoing trial for perjury in taking out a licence when she "married" one of her own sex. As a result of this public interest the *Illustrated London News*, of March 16th, devoted a page to the amazing male impersonation of "Doctor James Barry," who acted as surgeon to a British regiment in many parts of the world. There may be some who can recall a time when she was stationed here with the Montreal garrison, in the late fifties.

She is said to have qualified at Edinburgh at the age of fifteen, and to have passed to a full surgeoncy on the staff, ultimately becoming Inspector-General of Hospitals. She died in England at the age of eighty, after retiring on a pension. The condoning of her many serious breaches of discipline led to the surmise that she had great influence at headquarters. This, and the fact that she was always well supplied with money, have aroused various speculations as to her origin. The most romantic of these describes her as the illegitimate daughter of the Prince Regent. It is more probable, however, that she was the grand-daughter of a Scottish earl, and adopted the medical profession from an attachment to an army surgeon who had died.

There cannot be many alive in Montreal who remember her. The late Dr. Robert Craik told the writer he remembered seeing her, and one of the social leaders of the period amused and interested the writer with tales about her. Sir Wm.

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Osler in *Bibliotheca Osleriana*, 5394, states Barry occupied a house, while stationed in Montreal, at the north-west corner of Sherbrooke and Durocher Streets, which has since disappeared. Dean Campbell of the Medical Faculty knew her well and attended her professionally without any suspicion of her sex. She was a strict vegetarian, and on accepting an invitation to dine sent the menu to be prepared for her. It often included the Quebec turnip, a vegetable for which she had a great liking. She invariably attached herself to the best looking woman at the gathering, naturally causing much annoyance to the men present. She was of a quarrelsome nature, and was engaged in two challenges, one of which she accepted without serious consequences. The other she declined, although she herself had provoked the quarrel, with subsequent loss of prestige and expulsion from the mess. Her excessive vanity was shown in the rich turn-out she drove in winter. Her sleigh was one of the finest in Montreal, and was decked with beautiful musk-ox robes. Her coachman and footman were the tallest men she could procure, and were always dressed in bearskin hats and capes. It was said that they revenged themselves for her rough treatment of them by driving at full speed through the "cahous," deaf to her cries, and she was usually found at the bottom of the sleigh, bruised and buried in her robes.

She took many precautions to conceal her sex, a deception which was successful until her death. To add to her height she wore heels two inches high, and an inner sole three inches thick. To disguise her figure she wrapped towels around her body. Her valet gave the number as six, but nevertheless asserted that he was ignorant of her sex. At the age of forty she was described as being youthful in appearance, with reddish hair, high cheek bones, and a shrill voice.

She died in 1865, and then her sex was discovered, in spite of provisions in her will designed to prevent this. The Registrar-General ordered an autopsy which established the fact that she was a woman, and that at one time she had borne a child. A military funeral which had previously been arranged was countermanded. This circumstance will strike a modern reader as decidedly unfair. There can be no doubt of her courage or of her medical skill. Lord Charles Somerset, whose personal medical attendant she was, described her as "the most skilful of physicians, but the most wayward of men." The fact of a woman practising medicine no longer appears incongruous. On the other hand, she was eccentric and unattractive in character, and her whole life was built upon a lie.

Like many more worthy figures of the past, her memory and her grave in Kensal Green Cemetery were alike neglected. The Baroness de Wagstaffe and Miss Jessica Grave undertook to restore her last resting-place, and the late Sir William Osler promised to assist them. The writer is unaware whether this project was actually carried out, or not. In any case, it is to be hoped that the memory of one who, while denying her sex, was yet a pioneer in what is perhaps its highest sphere of endeavour will not be entirely lost in a city where she once practised and drove out to dine.

THE DRAMA OF NAPOLEON III.

At the Royal Society of Medicine on Wednesday, March 20th, Dr. Leonard Williams told the story, with profuse illustrations on the screen, of the most dramatic figure of the nineteenth century, Charles Louis Napoleon Bonaparte, for four years President of the French Republic, which followed upon the fall of Louis Philippe, and from 1851, until the disastrous Franco-German War, Emperor of the French. The career of the Emperor as set forth by Dr. Williams amply proved the description given of him as an arch-conspirator, but the lecturer's main object was to show that the story possessed great medical interest. This also the disquisition proved, and we must assume that Dr. Williams was well documented before he definitely laid to the charge of pathological developments so great a share in the disastrous finish of the imperial adventurer's life. The early events of this life were told by Dr. Williams with deliberate brevity and a choice of caustic language that contrasted excellently with the grand, and often grandiose aspirations of Louis Napoleon; in a few sentences he covered the interval of intrigue and pleasure which is supposed to have suggested to Eugene Sue the character of Rodolphe; but he related the sensational story of the escape from Ham as such a story should be told, that is with gesture and with relish of the situations that were being depicted, and closed this part of his address with a description of the daring intriguer seated on the throne of France by what looked like popular acclaim, and married romantically to one of the most beautiful women in Europe. At this stage pathology enters and Dr. Williams described, in a way that was all the more terrible because simple words were used and flippant comments were interspersed, how the miseries arising from a vesical calculus helped to ruin the usurper's prestige in France, to alienate the affections of a profoundly ambitious spouse, to warp his judgment in the conduct of international affairs, finally to leave him the victim of unescapable tragedies. On the last passage in the life of Napoleon III., when as a sick and elderly man he sought refuge in England, Dr. Williams gave information that was probably new to his audience, and many, like ourselves, will wonder where support can be found for a daring surmise which would account for the closing scene of Louis Napoleon's life. The details of that scene are historical and were given in *The Lancet* at the time[1]. The Emperor was submitted a few days before his death to two belated attempts to relieve him by lithotrity of a calculus whose presence could be easily

associated with sufferings that he had endured for many years, and on the morning of the day when for the third time operative interference had been planned, he died before Sir Henry Thompson had commenced to operate. The account of the autopsy, signed by all the Emperor's advisers except Sir William Gull, was published in our columns, as was Sir William's minority report, and the documents were the subject of considerable comment from the medical point of view in many quarters, for they revealed circumstances which would usually be considered to constitute a bar against operative interference. It was not here that Dr. Williams did more than summarise contemporary documents; the sensational part of his address was to come when he suggested that the operations were undertaken at the Emperor's order. Louis Napoleon must have been told by Sir Henry Thompson, said Dr. Williams, out of Thompson's vast experience that the operative interference possible at that date would be extremely dangerous, but none the less the Emperor himself insisted. Why? asked Dr. Williams, replying, "Because Louis Napoleon was resolved to make an attempt to regain the French crown. He intended to make an Elba-like return in emulation of Napoleon I., and felt that such return could only be successfully staged if he rode with the troops."—*The Lancet*, **1**: 675, March 30, 1929.

A TRIBUTE TO HARVEY CUSHING

A hundred friends gathered in the laboratory of surgical research of Harvard University Medical School, April 8, to pay their respects to Dr. Harvey Cushing and to present a copy of the April number of the *Archives of Surgery*, which was dedicated to him on the occasion of his sixtieth birthday. The volume is unusually large and all of the papers were contributed by his pupils. Dr. Cushing was deeply moved. He recalled the pleasant associations with his many pupils in the last thirty years. Humour was added to the occasion, the *New England Journal of Medicine* says, by the reading of a poem, "The Tie That Binds," and the presentation of an "unusually gorgeous necktie." Tea was served. Dr. Cushing's family, members of the staff of the school and of the Peter Bent Brigham Hospital, Drs. Elliott C. Cutler, Cleveland, Kenneth G. McKenzie, Toronto, Ont., Emil Goetsch, Brooklyn, and Samuel C. Harvey, New Haven, were among those present.—*J. Am M. Ass.*, **92**: 1529, May 4, 1929.

Hospital Service Department Notes

THE RADIO AS A VALUABLE THERAPEUTIC AGENT

It is becoming more and more accepted that the mental condition of the patient is almost of as much importance as his physical condition and any agent which will tend to improve his mental condition must not be disregarded unless it is an entirely impractical one.

Many hospitals are installing radio equipment but it is, as yet, an almost unknown quantity as far as its workability is concerned. Unlike the hospital library, there are many difficulties in the way of radio installation in hospitals. There are many mechanical difficulties in the installing of a central radio set, which centralized plan seems to be the accepted one, that must be considered and overcome. The manner of wiring, keeping in mind that interference from other electrical services must be reduced to a minimum, is a difficult problem. Also interference from electrical motors, operating elevators, office machines, telephone switchboards, etc., is frequently encountered and must be overcome.

It would seem that a centralized plan of furnishing radio facilities to the patients might well be provided in all new buildings. One aerial well placed, both from a reception point of view and so that it will not be unsightly, can take care of the entire institution. A central receiving set placed in the office, probably near the telephone desk, can be controlled by office clerks and telephone operators. Wires can be run from the central set in conduit to each bedside and earphones supplied to each patient. In one hospital, the ear sets are rented to the patient at a nominal fee and this slight revenue assists in the radio upkeep.

The new wing at the Sarnia General Hospital, under construction at a cost of $135,000, will be radio-equipped throughout. There will be a central receiving set and head-phones for each bed. Other hospitals throughout Canada are also experimenting along this line and more information regarding results will be available at a later date.

The radio certainly holds a most important place in the every-day life of most families and when patients come from their home to the hospital they miss this feature of their home life. Hospitals are changing with the years and more thought is being given to beauty, cheer, and mental recreation. The radio, then, is just one more agent which may be utilized not only in brightening the hours which must be spent in the hospital but in cheering the patient on to ultimate recovery.—*The Canadian Hospital*, April 1929.

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PAYMENT FOR MOTOR ACCIDENTS

The twentieth century has received many sobriquets and that of the "Motor Age" may be as fitting as any. Like the rose with its thorns, this mechanical era has been accompanied by various difficulties and maladjustments which have not yet been fully corrected. Among these has been that of payment for the doctor and the hospital in motor accident cases.

It is easy to understand the reluctance, to put it mildly, of the patient or motorist to assume responsibility for these accounts. But that does not help the doctor nor the hospital. As Mr. R. H. Cameron remarked in his Presidential address to the Ontario Hospital Association, "In a majority of these cases the hospitals find it almost impossible to collect for their services. I have in mind a typical case, that of a young girl admitted to a local hospital over a year ago. She was severely injured in such an accident, and required a long period of care and treatment. The cost of maintenance to the hospital was several hundreds of dollars, but not a penny of this amount has been forthcoming. The injured parties say, "Collect from the owner of the car." The owner says, "It is not my fault." The Relief Officer will not accept responsibility for persons so injured. It is the hospital that pays the bill for speeding and careless driving. Is this fair? It is not! The man who drives or owns a car is, presumably, not a proper candidate for charity. Common humanity demands that those suffering accidents be treated, but it is not right that the hospitals should bear this heavy burden."

If, after more or less prolonged litigation, irritation, and endless subpœnas for evidence, the case is settled definitely, payment is made, as a rule, in the following order: lawyers, garage, damages, nurses, hospital, doctors. Frequently, available funds are exhausted after the first two items have been adjusted. All too frequently the party responsible for the accident has no tangible assets, is not insured, and cannot meet his obligations.

The situation becomes annually more acute. Last year, in Ontario alone, four hundred and twenty-two persons were killed, and three thousand nine hundred and seventy-six injured by motor cars. In the United States, more than eight hundred thousand people were injured and thirty thousand killed. The Metropolitan Life Insurance Company reports that, during August, 1928, 22.8 persons per 100,000 lives exposed were killed by automobiles, and, in September, 19.8 persons out of each 100,000 exposures lost their lives. Motor traffic is becoming denser each year and our network of improved highways is bringing this problem to practically every hospital in the country. A large and increasing proportion of automobile owners have very limited means, and one hospital superintendent reports that about 80 per cent of the accidents admitted to his hospital happened to people who are practically without funds. Such a situation spells one more reason why hospital costs are high.

THE REMEDY

What can be done about it? Some hospitals insist, in self-defense, that the victim or the person bringing in the patient agree to be held responsible, but such bargaining, while the patient lies under the sword of Damocles, is neither humane nor in keeping with the charitable ideals of our hospitals.

The solution of this problem seems to lie in some form of *compulsory liability insurance.* On this point, staff surgeons and hospital administrators appear to be agreed. Dr. H. W. Lewis, of the City Hospital, Saskatoon, states that "compulsory insurance for all car operators seems to be the solution." Of course, there would still be lawsuits and delays; the parties concerned might protest that hospital treatment was undertaken without their consent; in many cases responsibility might not be fixed; and vigilance would have to be exercised lest the hospital service clauses be omitted from the law, as occurred in one State across the border. But, at least, where responsibility could be fixed, a properly worded law would ensure payment for services rendered. To quote Mr. Cameron again, "I would suggest that the Legislative Committee of the Association (O.H.A.) should formulate and present to the Government a request for legislation which will provide that, when a plaintiff has been awarded damages in an action arising from an accident, the claim or account of the hospital and surgeon should be a lien upon the amount granted in the verdict. The amount of damages is usually arrived at by the judge, taking into consideration the expenses of the surgical and hospital treatment, loss of time, pain and suffering. The first of these is the most important and is frequently the only one that is not paid."

To lessen litigation and delay and to minimize the difficulties mentioned above, a very valuable suggestion has been made in *The Modern Hospital,* by the superintendent of St. Barnabas Hospital, Newark. Bearing in mind the success of the various Compensation Boards, he suggests that these cases be taken out of the hands of the courts and be considered by a commission set up by the government. The referees would not only hear the cases but would direct the disposition of the money paid in under a compulsory insurance scheme. Such a plan would ensure justice to all without heavy legal expense and the money would be paid to the commission for disbursement, in-

stead of being turned over to the successful appellant's lawyer. Various difficulties might come to mind, but the idea is worthy of consideration. Undoubtedly some form of protection for surgeons and hospitals is long overdue.

USE OF CONSENT OR RELEASE FORMS ADVISABLE

Several hospitals in different parts of Canada have written to this Department for information about *Release* or *Consent Forms*. While such forms have been used routinely by many hospitals for years, there are still a large number of institutions where no protective procedure is followed. So many hospitals and their staffs have been threatened with suit by "gold-digging" patients with fancied wrongs that some form of protection is highly advisable. The minds of some individuals turn to legal redress like that of the duck to water and they seem only too willing to follow the direction of some discounted legal adviser. Accordingly, it has been suggested that we reproduce a few representative release or consent forms, as used in some of our leading Canadian hospitals.

CONSENT FOR OPERATION

Several lawsuits are on record which have arisen from a misunderstanding as to the extent of the operation or whether the anæsthetic was to be for diagnosis alone without incision or removal of tissue. Verbal consent has been revoked on the witness stand. The tendency of to-day is to interpret the letter rather than the spirit of the law. Not only is it necessary to have a form which can be signed by the patient, but there must be a form for a relative or guardian in case the patient is unconscious, mentally unbalanced, or a minor. To avoid duplication, the following composite form is recommended:

.....HOSPITAL
Hosp. No.
OPERATION CONSENT

The nature of the { illness / injury } from which.....
.....{ am / is } suffering has been fully explained to me by.....
and I am willing that any operation should be performed which the Attending Surgeon may find necessary for { my / his / her } relief.
Witness .....
Date .....
Signed.....

The hospital, which drafted this form, uses a full-sized record sheet and has the form wording repeated in French and in Yiddish.

RELEASE FORM

This form is desirable for patients who become dissatisfied and demand permission to go home when such action would be highly detrimental to their convalescence. Frequently they have developed post-operative hernia and pneumonia and other complications and even have died from leaving the hospital against the advice of the doctor. The following release form is recommended:

.....HOSPITAL
RELEASE FORM

I hereby certify that the nature of my illness and my present condition have been fully explained to me.

I am leaving the Hospital against the advice of the doctor and will not hold the doctor nor the Hospital responsible for anything that may happen subsequent to my discharge.

Signature.....
Witness .....
Date .....

Note: The above declaration was interpreted to me by .....
Signature.....

Where the removal of the patient is insisted upon by a relative or guardian, the form below is considered satisfactory. To afford legal protection, however, the hospital or the attending doctor must have reasonable assurance that the party signing the release form is the next of kin, lawful guardian, or has equivalent authority.

.....HOSPITAL
Date.....
RELEASE

To the Superintendent:—

This is to certify that I am TAKING..... from the.....Hospital against the advice of the Doctor and will not hold the Doctor or Hospital responsible for anything that may happen subsequent to h..... discharge.

Witness .....
Signature.....
.....

Note: I have had the above declaration interpreted to me by.....
Signature.....

CONSENT FOR AUTOPSY

The increased scientific spirit manifested by the profession and the saner viewpoint of the public have resulted in many more autopsies being performed now than a decade or two ago. A simple but adequate *Consent for Autopsy* is as follows.

.....HOSPITAL
Date.....
CONSENT FOR AUTOPSY

To the Superintendent:—

I, the undersigned, nearest of kin, give the..... .....Hospital permission to hold an autopsy on the body of.....
Witness .....
Signature.....
Authorized by .....
Superintendent

G. HARVEY AGNEW.

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Provincial Association Notes

THE FORTY-NINTH ANNUAL MEETING OF THE ONTARIO MEDICAL ASSOCIATION

The forty-ninth annual meeting of the Ontario Medical Association was held in the Royal Connaught Hotel, Hamilton, on May 28, 29, 30 and 31, 1929. Our hosts, the Hamilton Medical Society, left no stone unturned to make this meeting one of the most successful in the history of the Association. The weather was ideal, and the attendance, including ladies, was a little over 1,200.

The Board of Directors met at 9.00 a.m. on Tuesday, May 28th, followed by the Committee on General Purposes at ten o'clock, with an attendance of about sixty delegates.

The first report presented was that of the Committee on Necrology, recording the loss by death of thirty-six members of the Association during the year.

The Report of the Board of Directors touched briefly upon the work of the Association throughout the past twelve months. Special mention was made of the District Meetings, which have now become a very important feature of the Association's activities.

A motion was introduced and approved authorizing the subdivision of District Number 5, creating a metropolitan area in the city of Toronto, and incorporating the balance into a separate district.

In connection with the Report of the Committee on Legislation and By-Laws, the Association went on record as disapproving the principle of having rubbing alcohol obtainable only on a physician's prescription.

The Committee on Education reported 212 post-graduate addresses delivered during the year to forty medical societies.

The Report of the Committee on Mental Hygiene is worthy of note, in that it contains a vast amount of valuable information with reference to conditions existing in the Province of Ontario at the present time.

The following changes in the Tariff, as recommended in the report of the Committee on Tariff, were approved:—

For Town and Country Practice:

1. That the Life Insurance Fee of $5.00 and up be deleted.
2. That intravenous medication be $5.00 and up.
3. That the clause "using stomach pump" be changed to "gastric lavage."
4. That anæsthesia for major operations be $15.00 and up.

For City Practice:

In addition to the four changes mentioned above, a fifth one was approved, providing for a fee of $15.00 and up for metacarpal and metatarsal dislocations.

The Nominating Committee met on the evening of Tuesday, May 28th, when the following officers were nominated for the ensuing year, and elected by the Association the following day:

President, Dr. John Ferguson, Toronto; *First Vice-president*, Dr. A. J. Grant, London; *Second Vice-president*, Dr. Ward Woolner, Ayr; *Honorary Treasurer*, Dr. G. Stewart Cameron, Peterborough; *Secretary*, Dr. T. C. Routley, Toronto.

Counsellors, Dr. J. D. Curtis, St. Thomas; Dr. A. J. McGanity, Kitchener; Dr. S. T. White, Orangeville; Dr. J. H. Holbrook, Hamilton; Dr. W. A. Lewis, Barrie; Dr. A. J. Mackenzie, Toronto; Dr. F. C. Neal, Peterborough; Dr. L. J. Austin, Kingston; Dr. W. S. Lyman, Ottawa; Dr. W. J. Cook, Sudbury; Dr. J. C. Gillie, Fort William.

The Nominating Committee also recommended that the next annual meeting of the Association will be held in the Royal York Hotel, Toronto, on May 27th, 28th, 29th and 30th, 1930.

On Tuesday evening, May 28th, the Round Table Dinner and Conference was held under the auspices of the Committee on Inter-Relations. This was one of the most successful Round Table discussions ever held by the Ontario Medical Association. There were 150 members and guests of the Association present, and the keenest interest was manifested in the discussion on the subject of Health Insurance. Great stress was laid upon the importance of building up a strong organization of the medical profession so that, if and when any plan of sickness and invalid insurance is introduced, representatives of the organized medical profession will be able to deal satisfactorily with it, in the interests of the profession and the public. A resolution was approved, requesting the Canadian Medical Association to approach the Federal Government with the idea of having a suitable commission appointed to make an exhaustive study of the problem of health insurance, and bring forward specific recommendations as to the best remedies for existing conditions; also that the Ontario Medical Association institute a Commission to study national health insurance as it might apply to conditions in the Province of Ontario.

The scientific program consisted of General Sessions, at which nineteen very excellent papers were presented by speakers from Italy, France, United States and Canada. There were also

sectional meetings in Eye, Ear, Nose and Throat, Medicine, Obstetrics and Gynæcology, Pædiatrics and Surgery.

The annual dinner of the Association was held in the Royal Connaught Hotel on Wednesday evening, May 29th, with an attendance of about 400. After dinner, the Presidential Address was delivered by Dr. E. A. McQuade, of Trenton. This was followed by an address by Professor G. B. Roatta, of Florence, Italy, on "The effects of fascism on private practice and state medicine." The remainder of the evening was spent in dancing.

On Thursday afternoon, the members of the Association were entertained at a Garden Party at "Elmwood", as guests of Dr. and Mrs. Ingersoll Olmsted. With ideal weather and beautiful surroundings, this was one of the happiest events of the whole convention.

On Thursday evening, while the Alumni Dinners were in progress, the visiting ladies were the guests of Dr. and Mrs. P. B. Macfarlane at a very delightful musicale. A most enjoyable evening was spent and the ladies were unanimous in the opinion that it was, indeed, a fitting climax to a perfect day.

Many other very pleasant functions were arranged for the entertainment of the visiting ladies, including a theatre party, a drive, via the mountain top, to Stony Creek Battlefield, afternoon tea at the Nurses' Residence of the General Hospital, and a drive to the Mountain Sanatorium, where they were entertained by Dr. and Mrs. J. H. Holbrook.

The golf tournament for the Hamilton Medical Society Cup was played at the Burlington Golf and Country Club, the winner of the trophy being Dr. J. P. Fawcett, of Hamilton.

Eleven years ago (in 1918) the Ontario Medical Association last met in Hamilton, and it was an excellent meeting. However, many thought it was surpassed by the meeting of 1929.

T. C. ROUTLEY

Medical Societies

THE WESTERN NOVA SCOTIA MEDICAL SOCIETY

The fifth annual meeting of the Western Nova Scotia Medical Society took place in the Kiwanis Club Rooms at Yarmouth on Tuesday afternoon, May 28th at 2 p.m., with the President, Dr. J. E. LeBlanc, in the chair. Twenty-four members were present.

After the routine business was concluded a scientific address entitled "Goitre; its significance and treatment" was given by Dr. Howard M. Clute, Surgeon of the Lahey Clinic in Boston. This proved a most interesting and instructive clinical address. It was interspersed with lantern slides demonstrating the different phases and types of goitre.

Dr. Clute opened his talk by saying that the normal thyroid gland underwent hypertrophic changes in three periods in a woman's life: adolescence, pregnancy, and at the menopause. He then dwelt at length upon the colloid type, the adenomatous, the exophthalmic and the malignant. The phases by which the unoperated adenomatous type passed into the malignant were very clearly explained. He impressed the hopelessness of this type of malignancy and illustrated the importance of examining carefully by x-ray, etc., for the substernal goitre frequently missed in some physical examinations. Dr. Clute's dictum is that, with the exception of the simple type met with in adolescence, once the diagnosis goitre is made the next step is to remove the mass. Dr. Clute dealt with the adenomatous type and the more prevalent exophthalmic goitre. He supported the various contentions with interesting statistics from the Lahey Clinic showing the results of the basal metabolic tests in periods from three to twelve months after operation, in both primary and secondary goitres, with most satisfying post-operative statistical results. Dr. Clute's teaching is that iodine should not be given except as a prophylactic and as a pre-operative medication. Given otherwise, it is his opinion that the great benefits obtained from it as a pre-operative measure are lost and for other types no permanent benefits follow its administration.

Following this clinical talk some eight patients were presented in which Dr. Clute demonstrated different diagnostic signs and explained clinically these different types of goitre. Among the cases shown were several N.C.A. cases and in these Dr. Clute demonstrated the difference between prominent glands in patients with thin necks, whose symptoms were not due to any thyroid disorder, and the differential diagnosis between these cases and toxic goitres was very clearly demonstrated clinically. Dr. Clute demonstrated several new clinical signs and particularly emphasized the value of quadriceps test as a differential symptom between exophthalmic cases and those of N. C. A. origin. In the discussion which followed, Drs. Campbell, Burton and Webster joined.

A hearty vote of thanks was moved by Dr. Farish and seconded by Dr. Gullison, extending

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the gratitude of the Society to the guest for his most instructive address. From the clear exposition of the subject, as well as the well arranged slides, and the very appropriate clinical demonstration of patients having almost all the different types of goitre discussed in the address, as well as general neurasthenia, Dr. Clute's clinic proved to be one of the most instructive and completed one of the most pleasant meetings which the society has had since its inception.

The following officers were elected: *President*, Dr. A. R. Campbell, Yarmouth; *Vice-president* for Digby, Dr. A. C. Campbell, Bear River; *Vice-president* for Shelburne, Dr. L. P. Churchill, Shelburne; *Vice-president* for Yarmouth, Dr. F. E. Gullison, Yarmouth; *Sec.-Treasurer*, Dr. T. A. Lebbetter, Yarmouth.

Nominated to the Provincial Executive of the Nova Scotia Medical Society were Drs. L. M. Morton, of Yarmouth, and W. C. O'Brien, of Wedgeport; auditors, Drs. Melanson and O'Brien.

THOMAS A. LEBBETTER,
Sec.-Treasurer.

THE REGINA AND DISTRICT MEDICAL SOCIETY

Dr. G. B. Roatta, Florence, Italy, and Dr. Armand-DeLille, Paris, addressed the Regina and District Medical Society in June. Dr. Roatta, who is a councillor of the Federazione Nationale Italiana Fascista for the Control of Tuberculosis, and is a director of dispensaries in Florence, said that Florence had had an active society fighting tuberculosis since 1900, and it now possesses a permanent seaside hospital of 150 beds for children, and a hospital of 140 beds outside the city. In addition, there are homes for children having contact with tuberculosis, a day camp, milk centres, and open air schools. Compulsory insurance against tuberculosis among all the working people of Italy has been brought about by the government; half of the premium is paid by employer and half by the worker. Full-time officials are employed for clinic and sanatorium work.

Dealing with various reforms inaugurated by the Fascisti party since it attained power in 1922, Dr. Roatta stated that all factories and other places of employment, having more than twenty-five employees, must have a first-aid station with a trained nurse in charge. A national board for protection of maternity and infancy has been established, with branches in every town and village. All normal maternity cases are delivered by midwives. The rate for puerperal sepsis is 9 per 10,000. No deaths from small-pox have occurred since 1921. The old problem of malaria has been combatted by drying the marshes and cultivating them intensively. Juvenile delinquincy has decreased by 50 per cent under the Fascisti regime.

Dr. Armand-DeLille, Secretary-general of the Grancher Foundation, said that it had been found that 60 per cent of new-born children whose parents have tuberculosis will also develop it, and that 40 per cent of these will die. Measures to combat this were begun by the Grancher Foundation, which came into being in 1903, and with which Dr. Armand-DeLille has been associated since 1907. Children of the affected parents have been taken from the slums of Paris and placed with families in the country for three or four years under special medical supervision. Thirty-five hundred children have been thus attended, and of this number only seven have developed the disease. The experiment began long enough ago in a number of cases to see the children grow up, marry, and themselves have perfectly healthy children.

He also described the vaccination method of Calmette, who after twenty years of research has produced a special strain of non-virulent tuberculosis, known as the B.C.G. vaccine. With this 106,000 children of affected parents have been vaccinated. This vaccine was at first given by mouth but the last two years it has been given subcutaneously. He hoped that in the course of some years tuberculosis would be as rare a disease as leprosy.

Dr. R. G. Ferguson, of the Fort Qu'Appelle Sanatorium also addressed the Society on "Tuberculosis in Europe." This was an account of his trip under the auspices of the Canadian Tuberculosis Association, in cooperation with the Anti-Tuberculosis Leagues and the Sun Life Assurance Company. In France the deaths from tuberculosis were 150 per 100,000, or more than four times that of Canada. France provided one bed for every five deaths. Saskatchewan provides two beds for every death. In France the disease was treated as an acute infection and only the open cases are hospitalized. Nearly 100,000 French children have been vaccinated against tuberculosis. English workers are bitter in their criticism of this method of vaccination; United States workers are almost as denunciatory; the Scandinavian countries are prepared to wait and see what happens to these children before speaking. Dr. Ferguson feels that the criticisms are so far mostly theoretical; none of the children have yet developed tuberculosis.

Another method of combatting the disease in France is to remove the children from homes where tuberculosis exists until five years of age, when they are returned to their parents with their resistance to the disease increased. In England it is almost impossible for a public patient to secure institutional treatment unless he has a positive sputum. While listening to

the debate in the House of Commons he learned that more than 100,000 beds had been taken over by the Department of Health this year for the treatment of infectious pulmonary cases but bone, gland, and some other types were not considered infectious by the government. The English were attacking the problem of the predisposed to tuberculosis by providing better houses and jobs for men who have come out of the sanatoria.

Contrasting conditions in Saskatchewan with those of Europe Dr. Ferguson stated that by November 1st, when the new sanatorium will be opened in Prince Albert, beds will be available for all cases of tuberculosis in the province, so that the disease is being treated both as an infectious disease and as a preventable disease. Part of the money from the sale of Christmas seals is being used to pay the family doctor to examine the contacts of tuberculous patients. With the rapid growth of population in the province and the opening of the northern mining areas Dr. Ferguson estimated that in another year's time, even with the increased accommodation at Prince Albert, there would be a shortage of beds, and emphasized the necessity of planning for five years ahead. Dr. F. C. Middleton, Acting Deputy Minister of Health, stated that the reason the new sanatorium was built in the north was that one-third of the deaths due to tuberculosis in the province occur north of where a line would pass if drawn through Rosthern, one-third between Rosthern and Craik, and one-third south of Craik. This shows the much higher per capita rate in the north than in the south.

LILLIAN A. CHASE

PREVENTION OF DENTAL DISEASES IN CHILDREN

At the meeting of the Section of Odontology of the Royal Society of Medicine on February 25th, Mr. George Northcroft presiding, a "casual communication" from Dr. J. Kingston Barton was read on "The prevention of diseases of the teeth in children." Dr. Kingston Barton stated that when he started in general practice, just fifty years ago, having plenty of spare time, he attended the out-patient departments of several of the children's hospitals in London. Impressed by the importance of the teeth, he printed, for free distribution amongst his patients who were mothers, sheets containing particulars of the milk dentition, the order of cutting, and the age at which (between the seventh and the twenty-fourth month) the different teeth were usually cut; then he asked that, in blank spaces provided, the age at which the teeth actually came through should be inserted, and he pointed out that any great delay in cutting should be reported to the medical adviser. Warnings and instructions were added with a view to preventing the onset of rickets, which was almost invariably the cause of delayed teething, and to ensure that the infant had food of the right kind. For twenty-five years, said Dr. Barton, he kept careful records of all the mouths which came under his observation. He found that a good state of the teeth and jaws was always associated with breast-feeding; the next best was seen in infants fed on ass's milk, or goat's milk, or fresh cow's milk; and the really bad teeth were found in children who had been hand-fed on various kinds of tinned or preserved milk foods, some of which were much worse than others in their ill effects. He also laid great stress in his practice, a generation ago, on the misuse of starch foods as given to infants. During the past twenty years it has been the fashion to scoff at the views expressed about the ill effects of starch, but in Professor Mellanby's most recent paper he noticed that emphasis was laid upon the ill effects of the too early use of various cereals in infant feeding. In the sheet just mentioned Dr. Barton had written: "Too early use of sago, rice, and bread, particularly if not well cooked, will also set up rickets." —*Brit. M. J.* **1**: 400, March 2, 1929.

CANADIAN SOCIETY FOR THE STUDY OF DISEASES OF CHILDREN

The Canadian Society for the Study of Diseases of Children held its seventh annual meeting on May 27th and 28th, in Hamilton, Ont. We hope to publish from time to time the various papers read at this meeting. In the meanwhile, the following notes on its deliberations have been supplied us by Dr. H. B. Cushing.

Considerable attention was paid at the meeting to the various acute infectious diseases. A paper was read by Drs. Hannah and Murray of Toronto on epidemic meningitis, reviewing the cases treated in the Hospital for Sick Children, and urging the importance of early diagnosis and early use of serum. Their mortality was 42 per cent, most of the fatal cases being infants or cases which had not been recognized early.

Dr. Hannah also gave a vivid picture of the condition known as hæmorrhagic diphtheria, reviewing the symptoms and course of 70 cases, all of which ended fatally. In view of the absolute failure of all treatment, he urged the importance of prevention by the earlier administration of antitoxin, and especially the active immunization of all young children.

Dr. George Smith of Toronto spoke of tetanus, pointing out the importance of giving immunizing doses of serum in the case of all wounds contaminated with soil. A physician omitting this precaution might be held liable for negligence and mal-practice. He also urged the importance of intensive treatment with large doses of serum in all cases where symptoms had developed, as offering the only hope of cure.

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University Notes

Dalhousie University

Sixteen graduates in medicine were awarded their diplomas at the Convocation of Dalhousie University held on the fourteenth of May. This is the smallest medical class that has graduated from Dalhousie for some years. On that occasion, the honorary degree of LL.D. was conferred upon Dr. George David Stewart, of New York, a native of Nova Scotia who has achieved eminence in the great republic. Dr. Stewart delivered the convocation address, in which, with medical education as his theme, he sustained well his reputation as an interesting and stimulating speaker.

A gift of two thousand dollars has been made to the Faculty of Dentistry by the Carnegie Corporation for the Advancement of Teaching. The gift is to be used in strengthening the dental library.

It is interesting to learn that the medical school of Dalhousie University has been added to those actively carrying on research work. It is announced that, following the publication of some work that emanated from the Pharmacological Department, under Professor O. S. Gibbs, Messrs, Parke, Davis and Company kindly offered to supply the sum of $1,500, to pay for an assistant to carry the investigation still farther. Owing to lack of funds it would have been quite impossible to advance the study without the help of this generous and timely gift. The subject of the research is "The action of the separated pituitary principles on the renal function of the fowl."

University of New Brunswick.

At the recent Encænia of the University of New Brunswick, the honorary degree of LL.D. was conferred on the Hon. Dr. H. I. Taylor, Minister of Health for New Brunswick. Dr. Taylor delivered the special address to the graduating class.

McGill University

At an impressive function held in the Medical Faculty Building on May 29th, the magnificent library of medical works, important in connection with the development of medical science, bequeathed by the late Sir William Osler, Bt., was formally presented to the University on behalf of the Osler family by Mr. H. S. Osler, K.C., and accepted by Principal Sir Arthur Currie. Addresses were given by Professor W. S. Thayer, of Baltimore, and Dr. W. W. Francis, the Osler Librarian. Further information in regard to this event can be found in our Editorial column in the present issue. After the dedication ceremonies were concluded those present had an opportunity of inspecting the Library and a special exhibit of "Osleriana."

Medals and prizes in the final year of the Faculty of Medicine were awarded recently as follows: The Holmes Gold Medal, John S. Lyon Browne. The Wood Gold Medal, Howard Lailey Elliot. The Joseph Morley Drake Prize in Pathology, Henry Paul Melanson. The Lieutenant-Governor's Silver Medal, John S. Lyon Browne. The Alexander D. Stewart Prize, James Paterson McInerney. The Williams Prize in Surgery, John S. Lyon Browne. Aggregate Honours: (1) Henry Paul Melanson; (2) John S. Lyon Browne; (3) Howard Lailey Elliot; (4) James Paterson McInerney.

Queen's University

At the recent convocation in Kingston fifty-one candidates received the degrees of M.D., C.M. The following is the list of Prize Winners in the Medical Faculty:

The Robert Bruce Scholarship ($75.00), awarded to the student making the highest number of marks on the regular examinations of the first year, was awarded to Perry E. White.

The New York Alumni Association Scholarship ($50.00), for the highest marks in Embryology and Histology of the second year, was awarded to Frederick A. Alexander. Honours: Robert Johnston.

A Faculty Scholarship ($50.00), awarded to the student making the highest marks on the examinations of the second year, Robert Johnston.

The N. F. Dupuis (Scholarship ($60.00), for the highest marks in Physiological Chemistry of the third year; William C. Blackwell, and Kenneth A. Roberts.

The Boak Scholarship ($50.00), awarded to the student making the highest marks in the written and oral examinations in Anatomy of the third year; James C. Samis.

The Dean Fowler Scholarship ($50.00), for the highest marks on the examinations of the fourth year; Michael W. C. Feeney.

A Faculty Scholarship ($50.00), for the highest marks on the examinations of the fifth year; Joseph A. Kearns.

The David Edward Mundell Scholarship ($50.00), awarded to the student making the highest aggregate marks in the Surgical Applied Anatomy final examinations of the fifth and sixth years; Walter F. Connell.

A Prize of $20.00 in gold, given by Dr. James, of Mattawa, for the best examination in final year Medicine and Clinical Medicine; Walter F. Connell.

The Canadian National Committee for Mental Hygiene Scholarship ($50.00) awarded to the student making the highest number of marks in Psychiatry; John T. Shea. Honours, Walter F. Connell.

A Prize for the best series of Pathological Cases, given by Dr. James Miller; Walter F. Connell, and William J. Henderson.

Professor's Prize in Medicine and Clinical Medicine; William J. Henderson.

Professor's Prize in Surgery and Clinical Surgery; Walter F. Connell.

Dr. D. T. Smith's Prize in Pharmacology; Michael W. C. Feeney.

Medal in Medicine; Walter F. Connell.

Medal in Surgery; William J. Henderson. Honours; Walter F. Connell.

University of Toronto

The position of Professor of Surgery in the Faculty of Medicine, University of Toronto, and Chief Surgeon of the Toronto General Hospital, which became vacant on the death of the late Dr. C. L. Starr last December, was filled by the Board of Governors of the University on May 23rd by the appointment of William Edward Gallie, M.D., F.R.C.S., England.

Dr. Gallie graduated as a Bachelor of Medicine from the University of Toronto in 1903, and was given the degree of M.D. (*cum laude*), in 1920, for a thesis on "The repair of bone." After acting as intern for a year in the Hospital for Sick Children, he went to New York, where he spent some time in studying orthopædic surgery at the Hospital for Ruptured and Crippled, under such famous men as Virgil P. Gibney, Royal Whitman, and William B. Coley.

Since his return to Toronto he has been actively engaged in the surgical work of the Hospital for Sick Children, where he succeeded the late Dr. C. L. Starr in 1921 as Chief Surgeon. In addition to his contributions on bone changes, Dr. Gallie has revolutionized operative procedures on hernia by the introduction of the use of the fascia lata as a living suture material, which he did on the basis of careful and thorough experimental investigation followed by its clinical application. The results of this work formed the subject of the Hunterian Oration, which he delivered as Hunterian Professor before the Royal College of Surgeons of England on April 30, 1924, under the title of "The transplantation of the fibrous tissues in the repair of anatomical defects."

In 1918, Dr. Gallie became a Fellow of the Royal College of Surgeons of England. He is also Fellow of the American Surgical Association, Member of the American Orthopædic Association, Fellow of the American College of Surgeons.

The first appointment in the Faculty of Medicine of Dr. Gallie was made in 1907 as Demonstrator of Anatomy, and in the following year, he became Demonstrator in Surgery and Clinical Surgery. In 1919 he was appointed an Associate and 1922 an Assistant Professor of Clinical Surgery.

E. STANLEY RYERSON

Medals, prizes, scholarships and fellowships, in the Faculty of Medicine, as follows, were awarded by the Senate of the University at the recent convocation.

The Gold Medal, Louis John Harris, B.A. The Silver Medals, *aeq.*, George Hamilton Hames, B.A., Charles Beecher Weld, M.A. The George Armstrong Peters Prize, Louis John Harris, B.A. The Reeve Prize, Miss C. Helen Craw. The Chappell Prize, Louis John Harris, B.A. The J. J. Mackenzie Prize, Louis John Harris, B.A. The Ellen Mickle Fellowship, Louis John Harris, B.A. The Charles Mickle Fellowship, George R. Minot, M.D., S.D. The Baptie Scholarship, Irving Creighton Sherman. The David Dunlap Memorial Scholarship, Fifth Year, Alexander Anderson Numbers; Sixth Year, George Lyman Duff, M.A.

University of Western Ontario

All students in the final year passed their school examinations and received their degrees in medicine on May 31st.

Scholarships and prizes were awarded as follows:

The Alpha Kappa Kappa Gold Medal, for the student obtaining the highest standing in the final year, R. J. Bristow. The J. B. Campbell Memorial Scholarship in Medicine, J. F. Kenzie. The J. B. Campbell Memorial Scholarship in Physiology, J. W. Gilchrist. The Class of 1917 Scholarship, L. D. Wilcox. The Khaki University and Y.M.C.A. Scholarship, W. S. Dick.

Manitoba University

A complimentary luncheon to the graduating class in Medicine of the University of Manitoba was tendered by the Manitoba Medical Alumni Association at the Fort Garry Hotel on May 15th. Dr. W. Harvey Smith, Honorary President of the Medical Students Association, spoke on the history of medicine in Manitoba,

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dealing especially with the human side of the medical pioneers, their courage, resourcefulness, and enterprise. Dr. W. E. Dwyer replied on behalf of the new graduates.

Much sympathy is felt for President and Mrs. James Maclean whose youngest son, Ian, died on May 13th following a street accident.

At convocation on May 16th honorary degrees were conferred upon Dr. Henry M. Ami, the noted Canadian geologist, of Montreal; Mayor D. M. Duncan, Superintendent of Winnipeg Public Schools; Rev. R. G. MacBeth, pastor of St. Paul's Presbyterian Church, Vancouver, and a well-known author; Dr. W. C. Murray, President of Saskatchewan University, and Professor Chester Martin, recently appointed head of the Department of History of Toronto University.

University of Alberta

The College of Physicians and Surgeons of Alberta gives five scholarships annually to the University to be awarded to medical students. The following were awards in 1929: Final year Surgery, Edward Francis Cain; Final year Medicine, Edward Francis Cain; Third and fourth year physiology, Charles Bruce Brown; Second and third years anatomy, John W. Bridge; First year proficiency, Sidney R. C. Nelson.

There were eighteen graduates in the Faculty of Medicine of Alberta University this year. All entered to take the examinations of the Medical Council of Canada.

Topics of Current Interest

BLOOD PRESSURE AND DISEASE

Almost every medical discussion nowadays shows the reversion of medical thought towards diatheses and types of constitution. The one on blood pressure at the Hunterian Society on March 25th proved no exception. Dr. Halls Dally, the opener, while enunciating his belief that the problem could only be rationalised from the biological standpoint, nevertheless ventured to lay down a certain standard of blood pressure in relation to age. Physiologically, he said, the physician might expect to find a blood pressure of 80/50 in a child of 5, of 100/50 in a child of 10, and a sharp rise with the onset of gonadal function at puberty to 120/75, while between the ages of 17 and 40 a man might be expected to show a reading of 125/80, and a woman of 115/75, both sexes rising slowly up to 135/88 at the age of 60. For venturing to give even this rough guide, however, Dr. Halls Dally was severely criticised by subsequent speakers. Dr. Campbell McClure declared that he had no interest whatever in an "average" blood pressure. Dr. Temple Gray averred that no statement had done more harm in medicine than the dictum, "A man is as old as his arteries." Some men would live to a ripe old age with arteries in an apparently hopeless condition; others would die young with apparently healthy vessels. He had seen men very ill with nephritis with a blood pressure of 85, and had known a man walking about with a blood pressure of 360. Dr. Temple Gray also pointed out that Kretschmer's four psycho-physiological types showed distinct differences in their blood-pressure levels, and Dr. McClure drew a vivid picture of the two constitutions, the high and low blood-pressure types. The person of the low-pressure type was an unsatisfactory child at school. He might have artistic talent, but he could not shine at intellectual work. He suffered from lassitude, headaches, insomnia, and evening fatigue. He was seen by the doctor in early manhood, but seldom when he was over 50. Slow to develop, he was rarely able to put his abilities on the market before he was 40, but by the time he was 60 he had far outdistanced his high blood-pressure rival, who had shot ahead at school with exuberant vitality, carried off all the prizes in his early professional career, and died intellectually at 38. The high-pressure type came to the doctor much later in life, and suffered from many disorders of cardiac and renal function to which the low-pressure man was a stranger. The latter has, Dr. McClure thought, to beware chiefly of early cancer, which is apt to hit him before he has time to react to the environment of ageing. There is a certain structural difference between the two types which is revealed in the shape of the heart. The low blood pressure type has a tubular heart, is always short of calcium, and is liable to tuberculosis; the high blood pressure type has the "bullock-heart," is always full of calcium, and has difficulty in elimination. If he contracts tuberculosis, he recovers. Dr. Halls Dally pointed out the peculiar resemblance between the symptoms of high and low blood pressure, and described them as expressions of two opposite forms of failure to adapt to the environment. Nevertheless, there must always remain a certain number of patients in whom abnormal blood pressure, as a direct measure of the load the heart and valves have to bear, and of the vasomotor tone, calls for therapeutic measures. The decision to treat should

never be based on simple systolic readings alone. The diastolic, the differential, and probably in future the arteriolar and capillary pressures, will all prove of great significance.—*Lancet*, **1**: 731, April 6, 1929.

EVOLUTION OF THE HUMAN FOOT

The H. O. Thomas Memorial Lecture, which was delivered by Sir Arthur Keith at Liverpool last May, has now been published in the *Journal of Bone and Joint Surgery;* it will repay careful study. Like all Sir Arthur Keith's handiwork, it is characterized by learning, research, keen observation, and clarity of exposition. He returns to an aspect of the subject with which he dealt nearly seven years ago (*British Medical Journal* **1**: 736, 1922), filling in detail and adding the results of new investigations into the evolutionary history of the human foot. Taking as examples the feet of pronograde monkeys, orthograde apes, and man, this fascinating inquiry leads us to a study of the anatomy of the foot in each of the genera considered, and of the evolution of the muscles and tendons, in response, as it were, to the calls made upon them by the needs and habits of each genus or species. The importance of muscular action in the maintenance of an efficient foot has been long insisted upon by Sir Robert Jones, and the anatomical and developmental evidence brought forward by Sir Arthur Keith fully supports this view. The fate of ligaments when unsupported by muscles can be seen by all who will look at the deformities following anterior poliomyelitis, while, on the other hand, the apparently flat foot of the stage dancer shows that well-developed muscles can render the foot highly efficient, notwithstanding great laxity of ligaments. The mechanical arch of the foot, in an architectural sense, with its so-called keystone, is a figment of the imagination, and belief in its existence can only be retained by those whose mechanical insight is as small as their appreciation of the rôle of muscles. In examining the form and functions of the foot it is necessary, as Sir Arthur Keith points out, to bear in mind the important consideration that evolutionary alterations in the human foot involve widespread changes in all the systems of the body, and that the type of foot of the orang, the gorilla, the chimpanzee, the gibbon, and others is the response of evolution to the demands of the whole organism. Lord Monboddo, with his admirer Peacock, and others, believed that modern man was the degenerate descendant of giant ancestors. In a sense Sir Arthur Keith supports this view, for he sees reason to think that we may be descended from giant arboreal ancestors, whose bodies, like that of the East African gorilla, became too heavy for climbing; they adopted, therefore, a terrestrial life, and developed a heel-bearing plantigrade foot. This study of the structure, and especially of the muscles of the foot of the gibbon, the great apes, and man, shows beautifully how the human foot may have developed from that of an unknown arboreal ancestor to its present state; Sir Arthur Keith confesses his ignorance how this has been brought about, but declares his certainty that the change has been effected "by biological means which are still resident in the body and will be discovered." The forces which we call Providence or Nature have thus, through uncounted ages, been busy fitting us with feet suited to the needs of barefooted man, but European man compresses all this elaborate mechanism of bones, muscles, and ligaments into a stiff unyielding case, which allows only a few of the crudest movements of the foot. We may judge to what an extent this restriction has been carried by the fact that the movements of the foot in everyday use can be so successfully imitated by an artificial one as to defy detection when the amputation is below the knee. Yet such a prosthesis, in place of the elaborate mechanism of the living foot, has only one joint which allows a hinge movement at the toes, and another outside the foot proper, at the ankle. Woman, meanwhile, emulous of her pronograde ancestor, raises her heel three inches from the ground, and destroys the efficacy of the hallucial lever by forcibly squeezing her great toe into a position of complete mechanical inefficiency. Yet despite this her athletic achievements surpass all that we have heard of Atalanta or the Amazons.—*Brit. M. J.* **1**: 463, March 9, 1929.

THE LONDON ZOOLOGICAL SOCIETY

One hundred years ago King George IV granted to the London Zoological Society a royal charter "for the advancement of zoology and animal physiology and the introduction of new and curious subjects," and on Monday last, at a special meeting held in University College, London, the society celebrated the centenary of this great event in its history. The study of zoology has always had a special attraction for medical men; the subject forms, and of necessity must always form, an essential part of the curriculum of the medical student, who, because he must become biological in outlook, has to realize that medical science itself involves but the intensive study of one of the highly developed animals. Many of the most celebrated zoologists have belonged to our profession, or else, like Charles Darwin, have been diverted to specialization in zoology while engaged in the study of medicine. Small

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wonder, then, that a large number of physicians and surgeons are not only Fellows of the Society, but are actively identified with its activities. The post-mortem room has been called the Palace of Truth from which many who have entered with one label have departed with another. No less valuable than the necropsy on the human subject is the study of comparative anatomy and pathology conducted in the society's prosectorium, and it is noteworthy that famous men closely associated with that work—Richard Owen, Huxley, Alfred Henry Garrod, W. A. Forbes, H. G. Plimmer, Murray, Elliot Smith, and Leiper—have also been members of the medical profession. Perhaps it is because for the past few years all the comparative anatomists of the society and its pathologists have been medical men that much of their contribution to knowledge has had a direct bearing on human health and sickness. Human anatomy has been enriched by Sonntag's work on the primates; the work of Bland-Sutton and H. H. Scott, now being ably continued by A. E. Hamerton, has added largely to our knowledge of human pathology. Even more than anatomy and pathology, the science of parasitology—because its study in man is inseparable from its study in animals—has been advanced in the society's prosectorium. Notable in this connection is the work of Beddard and Nicoll before the war, and since then of Leiper and his colleagues, who moreover, have rendered invaluable service by providing a number of the younger parasitologists with material for study. Though the medical profession as a whole has appreciated the value of comparative medicine only since the war, many of its leading members have long been engaged in its study, and nowhere more fruitfully than in the London Zoological Society's gardens. In this connection our profession owes a deep debt of gratitude to the society, and in particular to its brilliant secretary, Dr. P. Chalmers Mitchell, without whose assistance it is probable that much of the research work in comparative medicine could never have been carried through. The appointment of Dr. G. M. Vevers to the post of superintendent, hitherto occupied only by professional zoologists, is a further guarantee that every opportunity will be taken to foster the relation between zoology and general medicine. But research work has by no means been confined to the prosectorium. The new aquarium has provided a vehicle for investigating problems intimately connected with one of our most important food supplies; the gardens themselves have afforded conditions unattainable in the laboratory for the study of economic zoology; and the library, one of the finest of its kind, offers the student and worker the whole range of zoological literature. We congratulate the society on its hundredth birthday. Not only has it captured the popular imagination as no other similar society in any part of the world, but it has prosecuted and encouraged active research into problems of fundamental importance to human and comparative anatomy. It enters its second century with the best wishes of the medical profession.—*Brit. M. J.* **1**: 821, May 4, 1929.

TENDENCIES OF MEDICAL EDUCATION IN AMERICA

The transition from individualism and *laissez-faire* to communal interference and even control, effected in this country during the middle of the nineteenth century, has had it counterpart in the United States during the last fifty years. As in England so in America, this evolution has not been achieved without considerable changes in social theory — changes, moreover, which have not been confined merely to the domains of politics and economics, but have invaded that synthesis of ideas and beliefs and aspirations collectively known as the spirit of the age. When economic life was dominated by *laissez-faire* so were other institutions, so even was ethics. The gradual supersession of individualism in industry, the revolution which began with factory legislation and moved irrevocably to trusts and rationalization, has been accompanied by a transformation not only in political theory, but by a corresponding change in the structure of nearly all social institutions. In America the most striking changes have been effected in medical education. William Low Bryan, President of Indiana University, writing in the *Journal of the Association of American Medical Colleges*, states that in the past fifty years America has seen the substitution of extreme licence in medical education by the other extreme of social control. As recently as twenty-five years ago America swarmed with medical schools, each autonomous and determining its own course of study and standard of qualification. Many of these schools were fraudulent and unable to give proper training for medical practice. Then, under the inspiration of the American Medical Association, came the passing of *laissez-faire;* schools were inspected with relentless thoroughness, black lists were published, and the weaker schools perished by the score. Within an astonishingly short time so extreme a revolution has been wrought in medical education that there are now signs of a reaction towards the old individualism. In other educational institutions, in the colleges of arts and sciences, this reaction is already an accomplished fact; daring educational experiments are being made, and here and there students are immune from strict prescription in their course of study. In Indiana

the non-medical student is free of all rules except that he must not shoot a professor; Mr. Bryan does not state if this rule is rigidly enforced. Significant of the present-day tendency—the tendency perhaps to blend what is best in social organization with a healthy individualism—is Mr. Bryan's peroration. "Across the path of every man," he says, "are the traffic cop, the health officer, and the rest of the police. What is infinitely more important, across the path of the youth are the schools and licensing boards which allow him or forbid him to make his living at his chosen profession. . . . Our task, and if necessary our fight, is to keep the school and all standardizing agencies in continuous living adaptation to the needs of man."—*Brit. M. J.* 1: 614, March 30, 1929.

THE IDEA AND THE METHOD IN MEDICAL RESEARCH

Claude Bernard,* in his "Introduction à l'étude de la médecine expérimentale," summed up briefly the relationship between the idea and the method in research:

> The experimental method cannot give new and fruitful ideas to men who have none; it can serve only to guide the ideas of men who have them, to direct their ideas and to develop them so as to get the best possible results. . . As only what has been sown in the ground will ever grow in it, so nothing will be developed by the experimental method except the ideas submitted to it. The method itself gives birth to nothing. Certain philosophers have made the mistake of according too much power to method along these lines.

In view of the emphasis placed to-day on scientific interest and research in our medical schools, and of the large and increasing numbers of persons engaged in medical research, it appears worth while to restate the relative importance of the idea and the method, with some indication of the contributions to medical knowledge that may be expected from various types of research. To quote Claude Bernard further,

> Men with a presentiment of new truths are rare in all the sciences; most men develop and follow the ideas of a few others. . . . We usually give the name of discovery to recognition of a new fact; but I think that the idea connected with the discovered fact is what really constitutes the discovery.

Obviously, only a small proportion of those actually engaged in medical research are born investigators; what may be expected, then, from the vast majority in whom training in the methods of investigation is substituted for creative genius? From the majority of them, nothing! Included among these are the large numbers of young men who try their wings and fail to discover a real liking or aptitude for scientific work. Yet their seemingly futile efforts must not be regarded as waste, since from the ranks of the beginners must be drawn the successes as well as the failures. Moreover, no one, however inept, can have first hand contact with the difficulties of advancing knowledge without carrying away with him some appreciation of the scientific method and of the way in which progress is made. The tragedy comes only when the misfit, through bad judgment or advice, continue to go through the motions of research instead of striving for a career in other directions.

From another group may be expected accurate observation, particularly valuable in establishing new facts or in confirming the results of others. Thus every discovery of a new therapeutic method must be subjected to widespread trial and, on the results of such trial, finally accepted or rejected. Much of this trial is quite unscientific, but there are now sufficient numbers of scientifically trained observers to make possible the rapid evaluation of any newly introduced therapeutic method, so that the issue does not remain long in doubt. Many of these observers are clinicians, scientifically trained, who find time in the busy routine of practice to observe accurately, and their contributions to medical knowledge must not be undervalued.

Still another group, working either in the laboratory or in the clinic, are capable of painstaking contributions by what may be called the analytic method. This method, which is the one employed by the majority of established investigators, varies from the minor setpiece of research, the German *arbeit*, to elaborate investigations having as an object the analysis of natural phenomena, with the hope of resynthesis and complete understanding of the subject under investigation. It may be and usually is employed by the investigator well trained in scientific method but lacking in original ideas, and from the method come many pieces of solid contribution to knowledge. The only danger here lies, as pointed out by Claude Bernard, in attributing too much power to method as a substitute for ideas.

Finally come the favoured few in whom the value of the idea transcends all questions of method. Theirs are the intellects which are so endowed as to perceive and grasp the subtle and delicate relations which exist but of which the average mind is not aware. An idea arises in such a mind which "may be a sort of intuitive anticipation of successful research." From these few, and from these only, may we expect great and strikingly original contributions to medicine. That they must use the methods common to all investigators in establishing the truth of their ideas is of course

* Bernard, Claude: An Introduction to the Study of Experimental Medicine (English translation), New York, p. 34, 1927.

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understood, but the place of method in their lives is distinctly subordinate to the idea—and rightly so!—Editorial, *J. Am. M. Ass.* **91**: 1111, Oct. 13, 1928.

A WARNING TO STRONG SWIMMERS

Dr. W. A. Young, director of the Medical Research Institute of the Gold Coast, was a particularly expert swimmer, and before his death from yellow fever last May he wrote an article in the *West Africa Journal* suggesting a possible cause of fatalities in surf-bathing. In not a few autopsies on native bathers found washed up on the beach Dr. Young noted that the lungs were aerated and there was no water in the stomach, but this organ occasionally showed some distension. He was in the habit of returning the cause of death as heart failure from prolonged exertion, but a paper on hypochlorhydria and air-swallowing suggested to him that the air-swallowing which took place while swimming might cause sufficient distension of the stomach to lead to functional angina pectoris. In order to swim out to sea against large breakers it is necessary to dive deeply, and even on the surface breathing is a matter of picking the right moment and dodging the foam and chop. It is therefore necessary to hold the breath for long periods and to breathe in quick gulps as opportunity offers. While these gulps may themselves cause a certain amount of air-swallowing, Dr. Young thought it more probable that air entered the stomach while the swimmer was under water. After the breath has been held against exertion for a certain length of time, he said, the respiratory centre refuses to be controlled; the expiratory muscles contract slightly, the cheeks puff out a bit, and air is swallowed. On reaching the surface, even though a deep breath be taken at once, he had noticed that there was sometimes a slight feeling of nausea and a curious sensation of lack of confidence. Eructation gave immediate but not complete relief; it had to be repeated several times to restore well-being, and there might be actual vomiting. Both from his own experience and from post-mortem findings Dr. Young believed it likely that this pneumatic distension of the stomach could cause reflex cardiac failure. As he remarked, this bears out the traditional advice "not to bathe on a full stomach"; it is not so much the food that matters as the room it takes up, so that a very little air can cause a lot of distension. If eructation is impossible—and it is a feat of which not everyone is capable—the remedy suggested was to let the air slowly trickle out of the mouth under water when the respiratory strain became too great. This should relieve the intra-buccal pressure and avert the necessity for swallowing.—*The Lancet*, **2**: 1351, Dec. 29, 1928.

MEDICAL PRESCRIPTIONS OF ALCOHOL

The Bureau of Prohibition of the Treasury Department has just made available statistics regarding the use of intoxicating liquors under official auspices in the United States. The pamphlet concerned provides statements pertaining to the amounts of various types of alcoholic liquors produced and used at various times previous to and since the passing of the eighteenth amendment, as well as full information concerning arrests, seizures and other activities of the Prohibition Department. During 1928, 68,951 physicians used prescription books as contrasted with 48,097 in 1927. The number of licensed physicians in those states which permit the use of liquor for medicinal purposes is 116,756, so that a little more than one-half the total number of physicians permitted to prescribe alcoholic liquors avail themselves of the opportunity. During 1927, 14,948 physicians used one book during the year; 8,743 used two books; 10,861 used three books and 13,545 used four books. Apparently, therefore, slightly more than 10 per cent of all the physicians who might prescribe alcoholic liquors used the total number of prescriptions afforded them by the government. The total number of prescriptions issued during the year increased from more than eight million in 1922 to approximately thirteen and a half million in 1925 and then decreased to less than twelve million in 1927. July 1, 1927, there were outstanding 94,958 permits for physicians, dentists and veterinarians to prescribe and use intoxicating liquor. During the year 16,906 new permits were issued, 10,405 were canceled, surrendered or expired, and 407 permits were revoked. At the close of the year, therefore, the number of outstanding permits of this kind had increased to 101,052. These figures are offered without comment in order that the medical profession may have some conception of the status of medical prescription of alcoholic liquors.—*J. Am. M. Ass.* **92**: 1130, March 30, 1929.

Special Correspondence

The Edinburgh Letter

(From our own correspondent)

Sir Alfred Ewing, K.C.B., LL.D., the retiring Principal of Edinburgh University received the freedom of the City of Edinburgh on April 18th. Lord Provost Sir Alexander Stevenson presided, and spoke of Sir Alfred's distinguished career as a teacher and administrator during his thirteen years as Principal of the University. In replying, Sir Alfred reminded his audience that it was fifty-eight years since he first entered Edinburgh University. He recalled to memory some of his teachers, P. G. Tait, Fleming Jenkin, and, possibly the greatest of these, the late Lord Kelvin. He referred to the fact that the "Tounis' College" had been opened in 1583 at one of Scotland's recurrent periods of conflict and difficulty, when the country was still glowing from the influence of Knox and Buchanan. The Town Council had founded and had fostered and cherished it during the succeeding centuries, until it had come to be recognized throughout the world as the University of Edinburgh. During the thirteen years that Sir Alfred Ewing has been Principal, the University has greatly expanded. Financial assistance has been received in the form of generous bequests from old students and friends of the University and of gifts from public bodies, including the Rockefeller Trust and the International Education Board. Apart from the annual income and special grants received from time to time from the Carnegie Trust and from the University Grants Committee, a sum of £844,000 has been gifted from bequests, private sources and public bodies, of which £296,000 have come from individual donors.

Sir Thomas Henry Holland, K.C.S.I., K.C.I.E., is to succeed Sir Alfred Ewing as Principal of Edinburgh University. He is at present Rector of the Imperial College of Science and Technology in London. Sir Thomas is one of the foremost scientists of the day, and is President-elect of the British Association which meets this year in South Africa. He is the son of the late Mr. John Holland of Springfield, Canada, and was born in 1868. He joined the Indian Service and held various important appointments in the East. He had charge of the Indian Geological Survey from 1903 to 1909, and was a Fellow of Calcutta University and Dean of the Faculty of Science. In 1909 he left India to become a professor of Geology and Mineralogy at Manchester University. In 1917 he was President of the Board of Munitions in India. In 1920 he was appointed a member of the Governor General's Council of India, holding the position till the following year. He has been chairman of the Council of the Royal Society of Arts, and vice-president of the Royal Society. This is not the first time that Edinburgh has appointed a Principal with Indian experience, and in this connection Sir William Muir's term of office from 1884 to 1903 will be recalled. It is not inappropriate that the new Principal should have this association with our Eastern Empire in view of the numbers of Indian students that come to Edinburgh for education and training. It is further a matter of congratulation that Sir Thomas Holland should be by birth a Canadian. The new appointment should emphasize the international character of this Imperial seat of learning, thronged as it is with students from all parts of the world.

The Franklin Institute of the State of Pennsylvania has awarded the Elliot Cresson gold medal to Principal Sir James Irvine, of St. Andrew's University, "for his brilliant research on carbohydrate chemistry." The medal is to be presented on May 25 within the Franklin Institute, and will be accepted on behalf of the Principal by Sir Esme Howard, British Ambassador to the United States.

The appointment of His Royal Highness the Duke of York to be Lord High Commissioner to the General Assembly of the Church of Scotland has been acclaimed with pleasure throughout Scotland and the general satisfaction has been enhanced by the fact that His Royal Highness will be accompanied by the Duchess of York. This is the last occasion that the Church of Scotland will hold its independent Assembly, as October next will see its union with the United Free Church. During their stay at the Palace of Holyroodhouse the services of the Duke and Duchess will be greatly in demand visiting and opening various public institutions. They are to lay the foundation stone of a new institution for mental defectives which is to be erected on the estates of Gogarburn and Kellerstain near Edinburgh. This site comprises 420 acres, and the institution when completed will offer accommodation for 500 inmates, which may be raised to 1,000 by the erection of additional dormitories. This home is meant to serve not only Edinburgh but also the South Eastern Counties of Scotland. It is to be not only a place for adult defectives but also for defective children under sixteen years of age. The entire scheme is expected to cost more than £400,000. In addition their Royal Highnesses will visit Inverness on May 17, for the purpose of opening the new buildings of the Northern Infirmary.

Sir George Berry, M.D., and Mr. John Buchan, LL.D., have been invited to become prospective Unionist candidates for the Scottish

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Universities at the forthcoming General Parliamentary election. Sir George Berry succeeded Sir Watson Cheyne in the representation of the Universities in 1922. He is consulting surgeon-oculist to His Majesty in Scotland, as well as ex-president of the Royal College of Surgeons, Edinburgh, and of the Ophthalmological Society of the United Kingdom. Mr. Buchan is the well-known author. He became a representative of the Universities at a by-election in 1927 on the death of Sir Henry Craik.

The Governors of the Astley-Ainslie Institution have appointed Lieut-Colonel John Cunningham of the Indian Medical Service to be Medical Superintendent of the Institution. Colonel Cunningham who graduated M.B., Ch.B., in 1904, was until recently Director of the Institute of Preventive Medicine, Guindy, Madras, S. India, and was formerly Assistant-Director of Central Research Institute, Kasauli. He has contributed various articles on clinical medicine to medical publications. He is a son of the late Professor D. J. Cunningham, Professor of Anatomy in the University of Edinburgh, and the editor of the well-known textbook. The Astley-Ainslie Institute has been in the course of construction during the last three years at Millbank at the south side of Edinburgh. It is intended for the reception of patients from the Royal Infirmary, who are to be sent there during an early stage in their convalescence. It is hoped by this means to be able to curtail the length of stay of the patients in the wards of the infirmary and so relieve the long lists of those awaiting treatment.

GEORGE GIBSON

23 Cluny Terrace, Edinburgh.

The London Letter

(From our own correspondent)

With the orientation of medicine towards the preventive side has come a new outlook upon dentistry. In the old days, not so very long ago, the dentist was a strong man who possessed a pair of forceps and a chair. Then the study of conservative methods of treating diseases of the teeth began to make its appearance, while the last steps were only taken within recent times, and include such work as that of Mrs. Mellanby on the relation of diet to dental disease and the development of the school dental service. Already the teeth of the school-child are beginning to show improvement, and with the idea of preventing development of dental disease many municipal and educational authorities are employing a "Dental Officer of Health" whose object is to keep people's teeth from going wrong, just as the medical officer of health safeguards the health of the inhabitants of the area where he works. The result has been a great expansion in the public dental service and recently the British Dental Association has given serious consideration to the question of establishing a diploma in public dentistry. This would be a post-graduate diploma with work lasting over a year, both theoretical work, such as principles of sanitation, vital statistics, oral hygiene, etc., and practical work under the supervision of a senior dental officer. The public health dentist would be required to have had first-class experience of work in maternity and child-welfare centres, venereal disease and tuberculosis clinics. He would also have to gain special experience in the handling of children, among whom much of his work would lie. So far these proposals have had a disappointing reception by the university and licensing authorities. Perhaps some encouragement may be taken from the recent establishment of a large new dental clinic in connection with the Royal Free Hospital. The foundation stone of this was laid by the Prince of Wales, and the clinic is the result of a gift of £200,000 by Mr. George Eastman, of the Eastman Kodak Company.

With disarmament glibly on the tongue of all politicians, and a definite pacific outlook among the nations of the world, it seems strange that an International Congress of Military Medicine should find much to occupy its interest. Yet the fifth of these congresses held in London last month was attended by some 800 members, including official delegates from close upon forty countries. The principal meetings were held at the House of the British Medical Association, where Sir Laming Worthington-Evans, the Secretary of State for War, performed the opening ceremony and the congress was inaugurated by the President, Lieut.-General Sir Matthew Fell, Director-General of the Medical Services of the British Army. It cannot be said that anything very startling was brought forward in the discussion, but perhaps an exception might be made in favour of some of the details given on the transport of the wounded by air. This method which has been under trial in various parts of the world for some years is now so far accepted that one speaker referred to it as "a routine method of evacuation." Anyone who studies the development of the motor ambulance service in this country will see that first of all the Red Cross Society gained great experience in war-time, transferred its experience to the municipal health authorities during the succeeding years, and out of this has been built up a magnificent ambulance service all over this country. In the same way the development of an air-ambulance service by the military authorities may well in time have its development in civil life. After reading the reports of the Congress, all to do with war, it all seems rather stupid

to talk of peace and yet be discussing the best way of dealing with the wounded!

In 1908, a Royal Commission on the Feeble-minded estimated that there were just over four mentally deficient people per 1,000 of population. Now, some twenty years later, despite all public health efforts, the incidence figure is estimated at 8.5 per 1,000 and this comparison ignores the general increase in population. In other words there are 300,000 mentally defective persons in England and Wales and the report of the Joint Committee of the Board of Education and the Board of Control on Mental Deficiency, which has just been issued, gives some indication of what is to be done about this problem, especially as it affects children. It is suggested that, provided a child is not so backward as to be completely "uneducable," then there will be no need for certification, and mentally defective children will merely be recommended to special schools between the ages of 5 and 15, and apart from this there shall be no differentiation in these age limits between normal and mentally defective or retarded children. For children of the lowest grade "occupational centres," rather than schools, will have to be provided and residential centres will also form part of the scheme. By the Educational Acts and Mental Deficiency Acts the mentally defective child ought to be well looked after but somehow this does not always happen. The Report strongly urges those measures of co-ordination necessary to carry out the provisions already existing legislation.

About one year ago the proposed clinic for the treatment of rheumatic diseases in London was described in these notes. It is now announced that the building is in full progress of construction and is likely to be opened in September. All the money necessary for the building has been collected, and it is to be of a sufficient size to treat a normal average of 400 cases a day. It will be remembered that the Clinic was suggested by the British Committee on Rheumatism, who worked out the final scheme with the Red Cross Society and issued a joint appeal. All varieties of treatment, such as radiation, manipulation, massage, douches and electrical applications will be available. Those patients able to pay will be asked to do so, while the various industrial assurance societies will contribute. A consulting staff of honorary physicians has been appointed and everything is ready for the opening.

ALAN MONCRIEFF

London, June, 1929.

Abstracts from Current Literature

MEDICINE

Silicosis among Rock-Drillers, Blasters, and Excavators in New York City. Smith, A. R.

A Study of Silica Dust in Hard Rock Drilling in New York City. Fehnel, J. W., *J. Indus. Hygiene* **11**: 39, Feb. 1929.

In view of the extensive construction work under progress in most of the cities of the North American continent, the above studies are strikingly significant, as indicating the widespread character of silicosis.

Rock-drillers, blasters and excavators, 208 in number, engaged for the most part in subway construction, were subjected to careful study, and the surprisingly large number, 118 (or 57 per cent), of the men examined showed evidences of having the disease in its various stages. Rock-blasters as a group were the main sufferers. Dust particles 10 microns and under in size seem to be the chief cause. Prolonged exposure to, and concentration of the dust, are the main factors leading to silicosis and tuberculosis of the lungs. The outstanding physical manifestations of the disease were dyspnœa and expectoration. Physical signs revealed nothing of diagnostic value without a radiographic study of each individual case.

An ante-primary stage of the disease is considered in these studies, and it is pointed out that only by early diagnosis will we gain ground in eliminating this hazardous disease.

The advanced stages of silicosis seem to have a relationship to a previous history of pleurisy and pneumonia. As a pre-phthisical menace silicosis is undoubtedly a serious condition. The number of definitely established cases of tuberculosis was 19 (or 9 per cent) of the total cases. Tuberculous lesions were three times as numerous among the advanced cases of silicosis. The recommendations given at the conclusion of the report are worthy of careful consideration. It is obvious to everyone of us that any success in checking silicosis will be obtained by preventive measures. The following are outlined.

The use of well fitting masks. These are of little preventive value. The prohibition of dry-drilling, and the substitution for this of jack-hammers fitted with water supply attachments. This method, though far from ideal, is nevertheless a noteworthy improvement. The attachment of sludge-and dust-collectors to the drilling machines. Proper ventilation, especially where tunnelling is being carried out. This is probably the best practical measure at our disposal. The reduction of dust-concentration, obtained by the

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proper spacing of drillers while they are at work.

Silicosis should be made a universally compensable disease. In this regard, and to obtain the greatest measure of satisfaction on all sides, the diagnosis should be in the hands of experts who are thoroughly conversant with all the phases and manifestations of the disease, both from the physical examination standpoint, and even more so the radiological. Then, and then only, will the present unsatisfactory state of affairs be dealt with adequately. J. R. FORREST

The Diagnosis of Lobar Pneumonia. Fitz, R., *New Eng. J. Med.* **200**: 20, May 16, 1929.

The onset of pneumonia may be so sharp, sudden, and painful that its beginning can be dated almost to a minute, or it may be difficult to tell when the attack of bronchitis or grippe ends and the more serious illness begins. Any case with cough and even slight fever deserves rest in bed as a preventive measure against pneumonia.

Pain in the chest was the next most common symptom; blood-tinged sputum occurred in over one-third of the cases; 55 per cent of the cases were conscious of some sudden change in their heat-regulating apparatus as the disease began. Few patients were consciously short of breath. Vomiting may usher in an attack of pneumonia. Finally there is a group of patients with pneumonia who are obviously ill and yet have no definite complaint beyond a profound degree of prostration.

Pneumonia at its onset is rarely accompanied by no increase in body temperature, pulse or respiration rate. Usually the temperature is 102 degrees, the pulse rate 120, and the respirations thirty or more to the minute. Certain common mistakes are easily made. It is difficult to examine a patient's back unless he is sitting upright; a patient is not harmed by being elevated to a semi-sitting position. Fluid in the chest may produce all the signs of consolidation except increased tactile fremitus. A pericardial effusion is often accompanied by an area of varying size at the back of the left chest, over which appear physical signs of frank consolidation.

The examination of the urine is not of help in the diagnosis. The white blood count is usually elevated, but occasionally is normal or subnormal. Often in young people pneumonia and appendicitis are confused, but if the suspects are carefully examined fewer patients with pneumonia will be subjected to laparotomy.

Elderly patients with suggestive signs of consolidation in the chest, but without concomitant fever, should be suspected of having some other illness than lobar pneumonia.

LILLIAN A. CHASE

Water Balance in Cardiac Decompensation. Van Valzah, R., McKinley, E. D., and Middleton, W. S., *Am. J. M. Sc.* **177**: 244, Feb. 1929.

Œdema is caused largely by dilatation of capillaries and veins because of faulty circulation. Other possible causes are increased filtration pressure, increased permeability of capillaries, delayed absorption of fluid by the tissues. The kidneys play a great part in elimination and their efficiency depends on glomerular filtration, which again varies with venous pressure in an inverse ratio, i.e., falling venous pressure means diuresis.

These facts indicate the importance of the water balance in cases of decompensation. The urinary output should be 60 per cent of the fluid intake; above this point it can be termed diuresis.

One hundred and eight cases of cardiac decompensation have been studied to demonstrate this point of view. The fatal cases invariably showed a poor response to bed, rest and other measures, while the cases that recovered showed definite diuresis. Both classes reacted at first, but the fatal type later fell below the output intake safety point, while those who did well kept above it. The factors influencing diuresis are then considered, rest in bed being given its proper importance. As regards diet, the chief points are low fluid and salt restriction. *Drugs.* First comes digitalis, effective because it improves circulation. When this fails we come to such diuretics as theobromin, theophyllin (theocin-synthetic). Cases are quoted with charts showing the successful reaction after using these agents. Mercury is also discussed—to be used only when the kidneys are intact—Niemeyer's pill, calomel, novasurol for intramuscular use, as this has a delayed action.

Altogether the authors prove conclusively that the water balance will serve as a very good therapeutic and prognostic guide in these cases.

P. M. MACDONNELL

Post-Operative Gastric Acidity. Lindsay, E. C., and Evans, W., *Lancet* **1**; 651, Mar. 30, 1929.

From a study of gastric acidity in relation to the operation of gastro-jejunostomy for peptic ulcer certain observations are made, some corroborating and others at variance with previous evidence. Ewald test meals were performed before operation, shortly (14 days) after operation, and again at a considerable period after convalescence, this latter interval varying from six months to eight years. Free hydrochloric acid findings only are given. A state of achlorhydria may be produced after operation, but in the larger percentage of cases this is not permanent and may be a result of post-operative bleeding or other transient factors. The value of the early post-operative acid

findings is questioned. A persistent absence of free hydrochloric acid was found in only 18 per cent of the cases. The final post-operative acidity level bore no relation to the pre-operative reading and seemed little affected by alkali therapy, smoking, and the use of alcohol. A high acidity result was not incompatible with perfect health. No tendency to jejunal ulceration was noted in those patients who retained high acid values. Some factor other than the neutralization of stomach acidity by regurgitation through the stoma must account for the effectiveness of this operation in the relieving of symptoms and the healing of duodenal ulceration.

J. B. ROSS

Nervous Complications Following the Use of Therapeutic and Prophylactic Sera. Kennedy, F., *Am. J. M. Sc.* **177**: 555, 1929.

In a brief report the author cites cases illustrative of different types of nerve palsies which may follow the use of sera or vaccines for therapeutic purposes, and suggests a method by which these complications may be overcome. He points out that serum sickness with the clinical picture of high fever, urticaria, leucopenia, and acutely inflamed joints, is well recognized, but that angio-neurotic œdema affecting the brain and meninges in the course of serum sickness is also not uncommon. Focal œdema in the central nervous system may give rise to transient aphasias, transient swellings of the ocular papillæ, and transient palsies and convulsions, synchronizing with urticarial manifestations outside the nervous system. The paresis may involve half of the body or a single muscle. It is often of the lower motor neurone type, resulting in muscular atrophy and loss of function for six months or longer.

Although these manifestations when they occur, usually follow the giving of serum they may rarely result from the giving of typhoid or other vaccines for prophylactic purposes. The urticarial œdema of the perineural tissue is probably of more importance than the toxicity of the serum or vaccine.

The intravenous injection of sodium bicarbonate prior to injection of serum is advocated as a preventive against serum reactions.

E. S. MILLS

SURGERY

Primary Epithelium of the Vulva. Rentschler, C. B., *Ann. Surg.* **89**: 709, May, 1929.

This paper is a review of seventy-one cases of primary epithelioma of the vulva seen at the Mayo Clinic over a period of twenty years. It is evidently a comparatively rare disease and most common between the sixth and seventh decades. The youngest patient was twenty-seven years and the eldest eighty-six. Trauma is of no etiological importance, but chronic irritation, such as pruritus, if it exists before there is any sign of tumour, is an etiological factor, for 40 per cent of the patients gave a definite history of it. The most common symptom is itching. Ulceration may appear any time during during the course of the disease, but 47.5 per cent of patients had ulceration when first examined. With the ulceration there is pain, more or less discharge, and sometimes slight bleeding. This condition gives rise to sleeplessness, secondary anæmia, cachexia, and sometimes urinary complaints.

Early diagnosis is of primary importance and women suffering from pruritus should be instructed regarding the value of repeated examination. In the differential diagnosis metastatic growths, tuberculosis, and syphilis must first be eliminated. The local lesion may be of the superficial vegetative type or of the deep infiltrative type.

Metastasis may occur any time during the course of the disease. The lymphatic drainage, with the exception of that of the clitoris, is first to the inguinal lymph nodes, usually on the same side, but cross drainage is anatomically possible and not infrequent. The lymphatic drainage from the clitoris is usually directed into the pelvis, and the inguinal lymph nodes drain directly into the pelvis. Palpable lymph nodes may not contain malignant lymph cells, but conversely the nodes may contain malignant cells without being palpable. The lesion is most frequently in the labia majora, and the average grade of malignancy is grade two, approaching grade three rather than grade one.

Regarding treatment, wide excision of the local growth and excision of the superficial and deep lymphatic glands on both sides, whether enlarged or not, is recommended. This should be supplemented by radium and x-ray. In malignancy of the graver types, namely grades three and four, this author believes it wise to excise only the local growths and supplement this by radium and x-ray applied over the site of the original growth and the lymphatic drainage.

In the series studied forty-five patients are dead and all except one died of carcinoma. The remaining seventeen patients of the series are still living, and of these thirteen are free from recurrence. The prognosis is fair for prolongation of life, but poor for cure.

R. V. B. SHIER

Tumours of the Parathyroid Glands. Guy, C. C., *Surg., Gyn. & Obst.* **48**: 587, April 1929.

Much work has been done and a great many articles have been written on the physiology and pathology of the parathyroid glands during the past twenty-five years, but comparatively few articles have been written on the possibility

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of tumours. There is apt to be confusion between thyroid and parathyroid neoplasms.

The author reports in detail a case of parathyroid tumour, occurring in a white woman who was a patient at the Cook County Hospital, Chicago, in 1926. A complete study of this case and also a review of the literature leads him to the following conclusions:

Adenomata of the parathyroids are comparatively rare tumours. No unquestionable case has been reported in which a tumour developed from a parathyroid rest in the thyroid gland. It would appear that benign tumours of years' duration may suddenly take on malignant characteristics. It is difficult to decide definitely between true adenoma formation and hyperplasia in the cases of parathyroid enlargement. The connection between neoplasms of the parathyroids and diseases of the bones is not definitely known. It would appear that compensatory hyperplasia of the remaining parathyroids after removal of one or more of the glands may occur rapidly. The histological picture of tumours of the parathyroids varies considerably in the predominance of cell types.

R. V. B. SHIER

Dupuytren's Contraction. Kanavel, A. B., Koch, S. L., and Mason, M. L., *Surg., Gyn. & Obst.* **48**: 145, Feb. 1929.

In this paper the authors review the literature on the subject of Dupuytren's contraction and report on 29 cases treated surgically. As a result of their experience, the importance of wide excision is emphasized, not only of the contracted fascia but of all its attachments to the skin, the interfascial septa, and the volar interosseous fascia. Care should be taken in the dissection and elevation of the skin to minimize trauma and avoid consequent necrosis. All skin that is hopelessly involved should be removed and free full thickness grafts should be inserted. No attempt should be made to bring the edges of the wound together under tension. Where there is marked contraction of the fingers the heads of the proximal phalanges should be excised, and the extensor tendons of the affected fingers should be shortened. Active movements should be instituted as soon as the wound is healed. Under this method of treatment complete restoration of function will generally be obtained, though stiffness of the fingers and partial anæsthesia may persist for some time.

A. G. NICHOLLS

The Differences Between High and Low Intestinal Obstruction in the Dog. Morton, J. J., *Arch. Surg.* **18**: 1119, No. 4, 1929.

It is a well known clinical fact that in intestinal obstruction the toxæmia which develops, is more rapid in its onset if the obstruction occurs high up in the intestine. In order to explain this fact, a series of experiments was performed on dogs, obstruction being produced at two levels, namely, the lower duodenum and the terminal ileum. Following these experiments, it was concluded that a high obstruction is more provocative of toxæmia than a low obstruction, because of certain anatomical and physiological differences.

It was definitely shown that the duodenum has a much richer vascular supply than the ileum. Not only are the larger vessels more numerous but the capillary network in the duodenum is much more extensive. This permits a duodenal loop to take up and retain larger amounts of poison than a similar ileal loop.

The rate of fluid secretion was found to be much greater in the duodenum than in the ileum. This leads to a higher intra-enteric pressure. For this reason the possibility of pressure necrosis and perforation is much greater in the duodenum, although the bursting pressures of duodenum and ileum are practically equal.

The increased intra-enteric pressure squeezes out the retained toxins into the general circulation faster than the body can detoxify them.

The exact pathway of absorption of the toxins still remains a problem. The most accepted theory is as follows. There is first a latent period with no manifest symptoms. During this time fluid is secreted into the obstructed loop, and bacterial growth progresses. Histamine-like bodies are formed, and absorbed into the intestinal wall. The capillaries become distended and fluid escapes from them into the tissue spaces. The toxins are retained in the intestinal walls due to circulatory and lymphatic stasis until such time as the increased intra-enteric pressure forces them out into the systemic circulation.

This theory would explain the rapid toxæmia which develops following release of an obstructed strangulated segment of bowel. It also explains the bad results following too much handling of the œdematous obstructed bowel.

P. G. SILVER

OBSTETRICS AND GYNÆCOLOGY

Uteroinsufflation followed by Pregnancy in 205 Cases out of a Series of 2,000 Cases of Infertility. Rubin, I. C., *Am. J. Obst. & Gyn.* **17**: 484, April 1929.

Rubin is a pioneer in connection with the attempt to diagnose, by means of the x-ray, obstruction in the Fallopian tubes in cases of sterility, and in the treatment of these cases by re-establishing the permeability of their lumina.

In this paper are given the results of his

experience. He had 2,000 cases of sterility, 1,970 being primary, and 930 secondary. By his method of treatment he obtained 205 gestations, with 188 accouchements at term, and 17 abortions. In addition, there were three ectopic pregnancies.

Twenty-seven per cent of the women were more than thirty years of age.

One hundred and fifty-two women out of the 205 became pregnant in the six months following insufflation. In 92 cases other measures were adopted in addition to insufflation, such as excitative irradiation. Insufflation should be practised, by preference, about the time of ovulation.

Rubin considers that, when a woman has been sterile for five years or longer, and then becomes pregnant in the month following insufflation, there must be some therapeutic merit in the procedure. At the same time, he points out that there are other factors in the etiology of sterility besides tubal obstruction. He, therefore, advocates a thorough examination of both husband and wife.

A. G. NICHOLLS

THERAPEUTICS

Colds and Asthma Associated with Colds. Preventive Treatment with Vaccines. Walker, C., *Arch. Int. Med.* **43**: 429, April 1929.

Asthmatic patients from whom sputum was not obtainable were treated with pooled streptococcic vaccine with beneficial results. This led to the treatment of patients with spasmodic asthma and colds with the pooled vaccine. Changes in prevalence of different varieties of streptococci seemed to occur during the warm season of the year; data were constant during the cool season. Not more than 4 of the 8 hæmolytic varieties of the streptococcus were prominent during any one period and not more than 5 of the 8 non-hæmolytic varieties.

In 1919 the pooled autogenous vaccine was replaced by a mixed streptococcus vaccine which consisted of equal parts of the streptococcus predominating for that period. Treatment consisted of weekly injections of 3 minims, the equivalent of three hundred million organisms. This dose was increased by one minim weekly for 8 to 10 weeks, given during the fall and early winter. The only cases presented are those who were under observation for four or more years. The ever present streptococcus cannot be prevented from invading the nose and throat of a person. If resistance is sufficient the organism will sooner or later be destroyed.

A total of 312 courses of vaccine were given to 97 patients. In 22 cases there was freedom from colds and asthma associated with colds for 6 months or less; in 28 freedom from 7 to 9 months; in 124 from 10 to 12 months; in 20 from 13 to 18 months; 13 were free for 2 years after one course; 5 were free for 3 or more years after one course.

Each fall the pevailing types of streptococci are different from those of the preceding year. If the vaccine is given in the fall its beneficial effects last for a year in most instances.

A few of the children who seemed to be protected from colds and measles, whooping cough, chicken-pox and scarlet fever. This is evidence that the symptoms of a common cold which precede these diseases are early symptoms of the disease itself rather than of a common cold which predisposes to the disease. This would seem to be true also of the few adults who had pneumonia and influenza.

LILLIAN A. CHASE

Le traitement de la névralgie faciale par le trichloréthylène. Busscher, R., *J. d. Neurol. et d. Psychiat.* **29**: Feb. 1929.

The promising line of treatment for facial neuralgia detailed in this paper is based on certain observations of Plessner's (1915) relative to the cases of four workmen who had been poisoned with trichlorethylene, when the following effects were produced: vertigo, vomiting, slight œdema of the optic papilla, and anæsthesia of the sensory portion of the trigeminal nerve, without involvement of the motor branch or of the other cranial nerves.

In view of these facts, Busscher tried the effects of trichlorethylene (manufactured under the name of "chlorylene") in cases of neuralgia of the trigeminal nerve. German neurologists had reported good results in from 25 to 40 per cent of cases. The results are said to be best in persons of alcoholic proclivities, in recent neuralgias, and in the so-called "essential" type.

The reaction on the part of individuals is very variable, and the inferior maxillary branch is apparently less sensitive to the medication than are the other divisions.

The drug, which should be administered with great care, may be given by inhalation, 25 to 30 drops on gauze, three times a day; or by the mouth, by means of gelatine capsules containing 25 to 30 centigrams. The treatment may be needed for only a few days, or, again, may have to be continued for several months.

The author, reporting 31 cases, gives the following: 6 cases cured, rapidly and completely; 4 with remissions of from two weeks to six months; 3 cases partially relieved; and 18 failures.

A. G. NICHOLLS

Foam Therapy. Russell, W. Kerr, *Brit. J. Actinother. & Physiother.* **4**: 34, May 1929.

A new form of treatment by means of specially prepared foam has been developed exten-

XUM

sively in Germany within recent months by Nagelschmidt and others. The first full account of this new idea published in Britain can be found in the May issue of the *British Journal of Actinotherapy and Physiotherapy*. This contains a complete description of the technique for preparing and using foam baths in their various forms. A special saponin is added to the water, and æration baths, sweating baths, carbon dioxide baths, and others can be obtained.

Foam, apparently, is of value for many local disorders. It is useful, for example, for the application of moist heat to painful joints, being very light and retaining its heat for prolonged periods; for cleansing the hair and scalp; for treating leucorrhœa and catarrhal vaginitis; for rectal and colonic irrigation in cases of constipation and various forms of colitis and enteritis; for urethritis; and for nasal catarrhs. Various medicaments can be added to the foam if desired. Apart from the mechanical effects of foam (stimulation, distension), mucus and cell debris are emulsified or dissolved. The foam particles are so small that they can enter pores and minute ducts, where they liberate their oxygen charge. In this connection it has been found by experiment that the oxygen penetrates at least one inch into the tissues.

This form of therapeusis appears to be at first sight, a bit "frothy," but there may very well be something in it; in any case, the article is worth reading for its clear presentation of a new line of treatment which has at least possibilities.

A. G. NICHOLLS

The Abuse of Drugs in Certain Psychopathic States with Reports of a Few Cases. Tillotson, K. J., *New Eng. J. Med.* **200**: 999, May 9, 1929.

The use of sedative drugs in the borderline mental cases is not conducive to the best therapeutic results; the use of such drugs only adds more toxic material to an organism that is already overburdened with the toxins of an abnormal psychological and physiological activity brought about through worry, fatigue, exhaustion or infection. The prolonged employment of drugs to combat various symptoms, and the resulting inability to give the patients sufficient nourishment and elimination by fluids for a considerable period of time, depletes the physical condition of these patients so that when they finally arrive at hospital they are so toxic and physically exhausted that treatment is difficult.

The drug system of therapy, so far as sedative drugs is concerned, has no rightful place in the practice of psychiatry and has been discredited at the McLean Hospital, Waverly, Mass., since the late 80's or early 90's.

Many of the borderline conditions could advantageously be referred earlier to the mental hospital where under proper care and treatment, the acute delirious episodes could often be prevented.

The false opinion formerly entertained that mental diseases were irremedial checked the rational impulse of humanity. Frequently patients themselves remark that if they had been sent to the hospital months before they would have been spared a great deal of suffering.

The types in which drug deliria most commonly occur and in which the use of sedative drugs should be especially avoided are: (1) The psychasthenic personality; these persons are weak-willed, undecided, hesitating, timid, not combative, not able to take the world as it is, idealistic, longing for love and kindness; they are easily led or misled, they need stimulation and are apt to yield without decision, notwithstanding their usually superior intelligence and vivid imagination. (2) The neurasthenic personality; this term should be reserved for the cases combining the symptoms of great exhaustibility and irritability. (3) The hypochondriacal personality; these patients are troubled with vain fears over trifles; they consult quack literature and the various cults; the impressions of bodily disease are apt to dominate. (4) The constitutional psychopathic inferior; the patient varies alternately from exuberant joy to boundless desolation, from feverish activity to profound discouragement. (5) The cyclothymic or alternating personality; this differs from the above in degree with more marked periods of depression and exhilaration. These personality types should be recognized by physicians and the use of sedative and hypnotic drugs avoided.

Legal restriction of the sale of hypnotic drugs, except on a physician's prescription and the use of the chemical names of the drugs, as for instance, diethyl-barbituric acid instead of veronal, seems advisable. The early recognition of the bad personality traits and symptoms which constitute one of the several psychopathic states, and the early hospital care and treatment for such cases, are recommended.

LILLIAN A. CHASE

PATHOLOGY

Beitrag zur Frage der Innervation der Geschwulste. (Contribution to the Question of the Innervation of Tumours). Herzog, E., *Virch. Archiv.* **268**: 536, 1928.

The author has examined about one hundred tumours of various kinds, both benign and malignant, including metastatic growths, for the purpose of detecting nerve filaments therein, if such exist. A modification of Bielschowsky's silver method was used.

The tumours examined included carcinoma, sarcoma, hypernephroma, glioma, endothelioma, adenofibroma, myoma, papilloma, polyps, and lymphogranuloma. In the majority of these, nerve fibres could be demonstrated in the stroma, provided that the new growths were not circumscribed or encapsulated, and that nerves were present normally in the tissues which they were invading. Nerve filaments were consistently absent in all strictly limited primary tumours, and no ingrowths of nerves from the periphery were demonstrated. The same was true of the metastatic growths. Signs of proliferation of embedded nerves were rarely noticed; the structures sometimes described as nerve-endings represent attempts at regeneration at the end of a nerve fibre. Some of the nerves found in tumours were medullated and some were non-medullated, probably nerves accompanying blood-vessels.

The author concludes that true neoplasms can grow without the influence of included nerves. He could not demonstrate the presence of specific trophic nerves in tumours. He thinks that the nerves accompanying vessels in the tissues of the host in close proximity to the growth undoubtedly exert an influence, but that there are no intrinsic specific nerves. A. G. NICHOLLS

Obituaries

Dr. A. MacKenzie Forbes died suddenly on the morning of May 16th at his home in Montreal. He had been ill for several weeks and confined to his house with myocarditis but the sudden end was unexpected.

Dr. Forbes was born in Montreal 55 years ago, and was educated at the Montreal High School and McGill University. He graduated with honours in Medicine in 1898. After an interneship at the Hospital for Ruptured and Crippled in New York, he started practice in Montreal and was shortly after appointed assistant surgeon to the Montreal General Hospital and Demonstrator of Anatomy at McGill University. From the time of his graduation he was especially interested in orthopædic surgery. He spent much time in the study of his specialty making numerous visits to the orthopædic centres in America and Europe and gradually acquired an international reputation as an authority and original investigator in his chosen subject. He was appointed Fellow of the American Orthopædic Association and later President of that body. He was appointed Clinical Professor of Orthopædic Surgery at McGill University, and was the author of numerous original articles on orthopædics. At the time of his death he was President of the Montreal Medico-Chirurgical Society.

Dr. A. MacKenzie Forbes

At the outbreak of the Great War he immediately volunteered his services and was sent to Valcartier Camp in the autumn of 1914, to go overseas with the 1st Canadian Contingent. After the winter at Salisbury Plains he went to France as one of the surgeons of the 1st Canadian General Hospital. He continued his services until obliged to return to carry out his duties in Montreal hospitals.

When the Montreal unit of the series of Shriners' Hospitals for Crippled Children was founded in Montreal, Dr. Forbes was appointed Surgeon-in-Chief of the unit, which position he held until his death.

However, it was by his work in connection with the Children's Memorial Hospital of Montreal that Dr. Forbes was best known, and this group of buildings remains a wonderful memorial to his personality, energy and devotion. As a young practitioner he conceived the idea of starting a separate hospital for children in Montreal. Through his enthusiasm and untiring energy he was able to interest others and open the institution in a rented house on Guy Street. In the face of many difficulties and discouragements he persisted in his plans until the institution was established and the present buildings constructed on Cedar Avenue. Realizing the handicap in the lack of education for disabled children, he later founded the Montreal School for Crippled Children, the first of its kind in Canada and one of the largest and best organized in America.

As a man Dr. Forbes was always a leader in any enterprise with which he was associated. A tireless worker, staunch and persevering in his purpose, he was able to accomplish almost impossible tasks with little or no assistance. He was a true and loyal friend and greatly beloved by many. Above all he was devoted to children and it was a pleasure to see the happiness and actual hero-worship of his many little patients in his hospitals. He was always original in his ideas and his teaching clinics were a great delight to the students. By his death Canada has lost a great citizen and his profession a truly great surgeon and teacher.

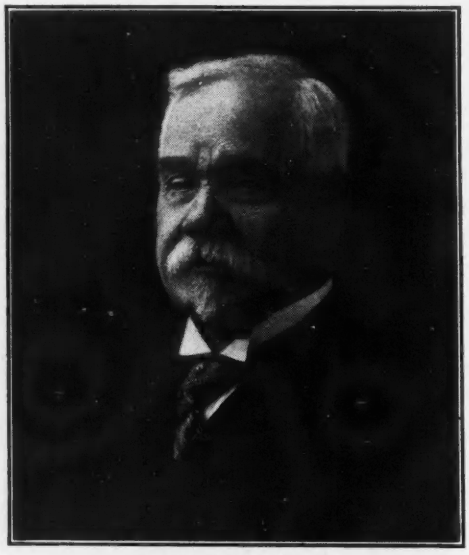
H. B. CUSHING

XUM

Dr. Angus MacKinnon died in Guelph on June 4, 1929. He was born on June 30, 1846. He was a Past-president of the Ontario Medical Association, having held the position of President in the year 1900, and was also a life member of the Ontario Medical Association.

AN APPRECIATION

With the death of Dr. Angus MacKinnon, of Guelph, Canadian medicine has lost an outstanding practitioner of the old school. Engaged in the practice of medicine since 1871, fifty years of which he spent in Guelph, few men have left, or can leave, behind them such a record of honest work as he has done. He was an example of the all-round practitioner. An able physician, he did a large amount of surgery and did it well, but in obstetrics he was particularly brilliant. Guelph was fortunate in having two such practitioners as Angus MacKinnon and Henry Howitt. Both were alert to the newer developments, and as good surgery was done in the Guelph General Hospital forty years ago as anywhere. There was no elaborate equipment, but the importance of asepsis and antisepsis was recognized.



Dr. Angus MacKinnon

Of Highland ancestry, Dr. MacKinnon had the active temper that often goes with that heritage, but with it much of Lowland caution and steadiness. Few men have a higher idea of what the conduct of the medical profession should be than he had. His ideals of professional conduct were unusual, and when a brother practitioner failed to observe the usual decencies of conduct, his feeling was more of sorrow that such things could be in a learned profession than the indignation which most of us would feel. He felt that any conduct other than the most exemplary was a blot on the honour of the whole profession.

The days of preceptor and student have gone almost entirely and this must be regretted. I count myself fortunate to have had him as a preceptor during three summer vacations and one could not have had a kinder one. The student learned to make up prescriptions, and absorbed a knowledge of materia medica and dosage in doing it. Whenever possible, the opportunity was given to do many of the minor things which many students never have any chance to do. There was much discussion of the daily problems and the constant effort to make the student think out matters for himself. The importance of the patient as a human being, the wisdom of understanding his peculiarities, and the need of knowing human nature, were always being emphasized. For his judgment I soon learned to have a profound admiration. His example and the training received from him have been important factors in my life. There are very few of his generation left, and the days have gone to a large extent when a man practised the healing art in so many ways. The younger generation may wonder that the same man might remove a cataract to-day and a prostate to-morrow. Angus MacKinnon did both well. He was one of the pioneers in Ontario in doing the operation for removal of the prostate. My memory brings back operations done by him in the country under all sorts of difficult conditions. Calls often came to go considerable distances without any clear indication of what was waiting. It might be a serious emergency demanding immediate operation with few facilities and very little help. His courage and skill had ample chance for demonstration. It was a good school for a medical student.

Honest, kind, always anxious to learn, straightforward in his dealings with patients and others of the profession, his passing means that another of the men who fought to do the best for their patients in the earlier days, when facilities were scarce and the difficulties greater, has gone. Medicine has developed along many lines, but the character of the best practitioners is after all the same in all stages of the history of our art. Stevenson's eulogy of the profession was fully earned by Angus MacKinnon.

THOMAS MCCRAE

Harry M. Andison, M.D. In the recent disastrous explosion and fire at the Cleveland Clinic Hospital, Dr. Harry Martin Andison of the hospital staff was one of the victims. He was the son of Mr. and Mrs. Augustus Andison, of 191 Sherbrooke Street, Winnipeg. Born in Winnipeg twenty-nine years ago, he was educated in the public schools and Kelvin Technical High School. After a brilliant course in the medical faculty of the University of Manitoba, he graduated in 1924 and was interne at the Children's Hospital, Winnipeg, Royal Jubilee Hospital, Victoria, B.C., and Manitoba Sanitorium, Ninette, before proceeding to Cleveland. He married Miss Currier, of Vancouver, a graduate of the Winnipeg General Hospital Training School. His funeral was held on May 20th, in the First Presbyterian Church, Winnipeg, and interment was in Brookside Cemetery.

In addition to his widow and parents he is survived by three brothers, Dr. Gordon Andison, Professor of French at Toronto University; George, of Toronto; Alexander, of Winnipeg, and one sister.

Dr. Andison's tragic death cut short a career of the utmost promise.

Dr. William H. Alexander died on May 7th at his home in Toronto, aged 67. A general breakdown in health caused him to relinquish practice a few months ago. He was born in Bolton, and was educated there and at the Toronto Model School. Before taking up the study of medicine he taught school in King Township. He graduated from Trinity College in 1894 and commenced practice in Toronto. He was formerly in the Queen's Own Rifles, and served with the late Gen. Sir William Otter in the suppression of the Northwest Rebellion. He was a member of St. Peter's Anglican Church. Surviving are his wife, formerly Miss Edith Laird; two brothers, Ernest, Toronto, and John, of Los Angeles; and two sisters, Miss Margaret and Mrs. W. G. Beamish, Toronto.

Dr. E. L. Connor, of Lethbridge, Alberta, who died on May 14th at the age of 48, was one of the outstanding members of the active surgical group of southern Alberta. Quantity was not his forte, but quality. Many of the cruder operations he hesitated to do, but those requiring very well balanced judg-

ment and the interpretation of obscure symptoms appealed to him at once and would receive his earnest attention. Nothing was too much trouble in preparation or in meeting difficulties which arose, but routine was apt to be irksome.

His ability and clear thinking combined with an exceedingly good memory for conditions and processes were acknowledged by all his confrères, who mourn his early demise.

He was a graduate of McGill University and spent some time abroad on different occasions, in addition to studying in American centres. He practised for several years at Pincher Creek before coming to Lethbridge. A Fellow of the American College of Surgeons, he was an ardent advocate of more thorough diagnosis and other features of their standardization program. His funeral from St. Patrick's Church was largely attended by his confrères and former patients.

W. S. GALBRAITH

R. U. Jeffery, M.D. Following a very short attack of broncho-pneumonia Dr. R. U. Jeffery died on May 2nd at his brother's home in Seattle whither he had gone to recuperate after influenza. The son of Ven. Archdeacon and Mrs. Jeffery of Winnipeg, he graduated from the Medical Faculty of the University of Manitoba in 1925. During his college course he distinguished himself as a student, winning one of the Chown medals and prize. After a trip to the Orient he began practice at Sumas, Wash. Later, he engaged in practice at Carberry, Manitoba, but finding the climate too severe, he returned to the Pacific Coast and became physician in a mental hospital at Essendale, B.C.

The funeral took place on May 9th from Holy Trinity Church, Winnipeg, to St. John's cemetery. His death cuts short a career of much promise and removes from us a young man of attractive personality.

Dr. P. R. E. LeSage. The death occurred on May 11th, at his home in Longueuil, Que., of Dr. P. R. E. LeSage.

Dr. Roy H. McGrath, of Fredericton, N.B., died in the Victoria General Hospital there, on May 23rd, aged fifty-one years, following a severe heart attack. His illness began with influenza in January last. Dr. McGrath was a native of Moncton and a graduate of St. Joseph's University and McGill Medical School. After graduating, he located in Fredericton and practised there until his death. Dr. McGrath was a member of the staff of the Victoria Hospital and had previously been a member of the Board of Health. He was a member of the Knights of Columbus and of the Fredericton City Club.

Dr. S. W. Otton, a well known medical man in Newmarket, Ont., was found dead in his home on May 19th. He had been in poor health for some time, but his end came as a great shock to his family and many friends. Dr. Otton served in France from 1916 to 1919, holding the rank of captain in the C.A.M.C. He is survived by his widow and two small sons.

Dr. William A. Proctor, of Toronto, some years ago a well-known athlete in the west end, died on May 19th in the Hospital for Incurables. He was 54 years of age, and had been an invalid for many years.

Dr. W. J. Shipley, a prominent physician of Calgary, died at his home during the latter part of April, after an illness extending over several months.

Dr. Shipley was born in Clinton, Ontario, where he received his early education. Proceeding to Western University at London, Ontario, he graduated from this institution in medicine in 1906. Coming west at this latter date, he spent a year as interne in the Brett Sanatorium at Banff, Alberta. In 1907 he entered on the practice of his profession at Calgary, where he remained until the time of his death.

Never of a robust constitution he frequently sought change of environment for the benefit of his health. Last December he was afflicted with a serious illness, but made a partial recovery and spent some time at Victoria, B.C., in search of health. He returned home, however, wholly unbenefited from his sojourn at the coast. He passed away unexpectedly.

Those who were intimate with him will ever remember his kindly genial nature and the ease with which he made friends. During the year 1918 he was President of the Calgary Medical Society, in which organization he always took a keen interest. He leaves a widow and three sons. His brother W. Mills Shipley, of Calgary, also survives him.

G. E. LEARMONTH

Dr. J. Newton Smith, or Hampton, N.B., died on May 9th, in the eighty-fourth year of his age, following a prolonged illness. Dr. Smith practised his profession for the last forty-eight years in Hampton. He was born at Smithtown on June 29, 1855. He received his education at the Hampton public schools, Fredericton normal school, and graduated in medicine from the University of the City of New York in 1881.

News Items

BRITISH EMPIRE

The Garton Prize and Medal

This prize and medal has been instituted by the Grand Council of the British Empire Cancer Campaign with the object of promoting investigations into the nature, causes, prevention and treatment of cancer.

A medal (suitably inscribed and engraved with the seal and motto of the Campaign), together with an honorarium of £500, will be awarded to the person, or group of persons, who shall submit the essay embodying the results of original investigations which, in the opinion of the Judges appointed by the Grand Council of the British Empire Cancer Campaign, is the best contribution towards the early diagnosis of cancer.

In the event of several dissertations of sufficient merit being submitted, the prize may be divided, or additional awards made.

The prize will be reserved if, in the opinion of the Council, no dissertation of sufficient merit be received.

Candidates, who may be of either sex, must be *British subjects domiciled in the British Empire or Dominions* and not at the time members of the Grand Council of the British Empire Cancer Campaign.

The honorarium may be awarded either to an individual or to a group of persons who jointly submit a dssertation.

The dissertations shall be printed or typewritten in English, and embody the results of original investigations carried out, either wholly or in part, during the three years immediately preceding the year in which the prize shall be awarded.

The dissertations shall not bear the name of the author or authors, but shall be distinguished by a motto or device, and be accompanied by a sealed envelope containing the name and address of the author, and having on the outside the motto and device corresponding with that on the dissertation.

XUM

The dissertations shall be addressed to the Honorary Secretary, British Empire Cancer Campaign, 19 Berkeley Street, London, W.1, and be delivered not later than *December 31st*, 1931.

The prize dissertation (with all accompanying illustrations and preparations) shall become the property of the British Empire Cancer Campaign, and shall be published at their discretion under the name of the author or authors.

Dissertations not approved for a prize shall, upon authenticated application within three years of the award on the specified subject, be returned together with the unopened envelopes containing the names and addresses of the authors.

The award of the Garton Prize and Medal will be made early in 1932.

Native Medical Practitioners in Fiji

Suva, the centre of the South Pacific, has had a system of training native medical practitioners, but by the aid of the Rockefeller Institute this system is to be developed and extended. The problem of giving medical aid to native populations is one of method and of finance. The annual expenditure of training native doctors for Fiji and the islands in the vicinity is likely to be about £3,300; the cost of the buildings and plant is £8,000. A tutor who came from Aberdeen University has been appointed, and will take charge of the main part of the practical teaching, and Government medical men and resident scientific officers will take charge of the more specialized teaching. The course is a three-year one, and forty students, chosen by competitive examination, and young men of high intelligence and good physique, will be trained without cost to their parents. When their training is complete they will be sent to various districts and given a salary ranging from £45 to £150 a year. They also will be given quarters, and, where there is no fully qualified doctor, will be allowed the right of private practice. When the scheme has developed arrangements will be made for post-graduate training.

Dr. William B. H. Massiah

Dr. William B. H. Massiah has been appointed a member of the Legislative Council of the Island of Barbados. He is a graduate in medicine of McGill University (1892).

GREAT BRITAIN

A National Radium Fund

On April 16th the Chancellor of the Exchequer announced that the Government had undertaken to contribute out of public money towards the purchase of radium, on a basis of £1 for every £1 otherwise subscribed, up to a limit of £100,000. A public appeal for £150,000 (making £250,000 in all) to form a "National Radium Fund" has now been set on foot by leaders of the medical profession acting in concert with laymen prominently associated with the work of hospitals and cancer research. The purpose and scope of the fund were indicated in a letter published in the *Times* of April 29th, over the signatures of Sir John Rose Bradford, Lord Moynihan, Lady Barrett, Sir E. Farquhar Buzzard, Lord Dawson of Penn, Dr. Robert A. Fleming, Lord Gorell, Sir Thomas Horder, Lord Knutsford, Mr. J. P. Lockhart-Mummery, Sir Ewen J. Maclean, Dr. J. M. H. MacLeod, Mr. Alexander Miles, Lord Reading, Sir Humphry Rolleston, Sir Arthur Stanley, Lord Stanmore, Sir StClair Thomson, and Sir John Bland-Sutton.

The money obtained in this way, together with that contributed by the Government, is to be held by a body known as the National Radium Trustees, who will buy therewith and hold radium for use by an administrative body of experts known as the National Radium Commission. The Trustees are being constituted by the Government in accordance with one of the recommendations made by the Radium Sub-committee of the Committee of Civil Research, but with two additional medical members to be nominated from their own number by the Radium Commission. The composition of the latter body has been modified so as to ensure adequate representation upon it of those familiar with the use of radium in medical practice, and its membership has been increased from nine to eleven. The Commission will thus consist of a chairman, appointed by the Trustees; six members, appointed by the Trustees from a list of names drawn up by the titular heads of the medical profession; and four members nominated respectively by the Minister of Health, the Secretary of State for Scotland, the Medical Research Council, and the Department of Scientific and Industrial Research. The general effect of these changes in the administrative framework of the scheme put forward by the Radium Subcommittee is summed up in the letter published on April 29th: "The radium will be bought and held by a body of Trustees which has the confidence alike of His Majesty's Government and the medical profession. It will be administered by a Commission which will contain an effective majority of members representing the skilled and experienced workers on the staffs of the voluntary hospitals."—*Brit. M. J.* **1:** 820, May 4, 1929.

The following week the *British Medical Journal* referred to the matter as follows: "It is gratifying to note that the National Radium Fund, for which an appeal had been launched in the *Times* of April 29th, was already over-subscribed on May 6th. The appeal for £150,000, the amount required for the National Radium Fund, was being made conjointly with a special appeal by King Edward's Hospital Fund in aid of the hospitals in the metropolitan area, as a thank-offering for the King's recovery, the latter project having for its nucleus the 100,000 guineas offered by an anonymous donor. The treasurer of the combined appeal is Lord Donoughmore, and its two branches, sharing a common office organization, have been administered throughout in the closest co-operation. Lord Donoughmore, in a letter to the press dated May 4th, has indicated that, the money required for the National Radium Fund having been subscribed, all connected with King Edward's Hospital Fund would wish that the needs of hospitals outside the metropolitan area should be more directly associated with the Thank-offering Fund.

In a letter to the *Times*, published on May 2nd, the Prime Minister expressed, on behalf of His Majesty's Government, the deep gratification with which they had seen the swift and spontaneous response of the public to the opportunity of manifesting its relief at the lifting of the shadow which lay over the country during the King's illness. With the £152,779 already in the National Radium Fund, and the Government's contribution of £100,000, practical steps could be taken to bring the benefit of radium treatment to many who would otherwise have waited for it in vain."—*Brit. M. J.* **1:** 865, May 11, 1929.

Katherine Bishop Harman Prize for Encouragement of Research into Disorders Incident to Maternity.

The Council of the British Medical Association is prepared to consider an award of the Katherine Bishop Harman Prize in the year 1930. The value of the prize is £80. Its purpose is the encouragement of study and research directed to the diminution and avoidance of the risks to health and life that are apt to arise in pregnancy

and child-bearing. Competitors are left free to select the work they wish to present, provided the work falls within the scope of the prize. Any medical practitioner registered in the British Empire is eligible to compete for the prize. Should the Council of the Association decide that no essay is of sufficient merit the prize will not be awarded in 1930, but will be offered in the year following this decision, and in this event the money value of the prize on the occasion in question will be such proportion of the accumulated income as the Council shall determine. The decision of the Council will be final. Each essay must be typewritten or printed in the English language, must be distinguished by a motto, and must be accompanied by a sealed envelope marked with the same motto and enclosing the candidate's name and address. Essays must be forwarded so as to reach the Medical Secretary, British Medical Association House, Tavistock Square, London, W.C.1, not later than December 31, 1929. Inquiries relative to the prize should also be addressed to the Medical Secretary as above.

The Poet Laureate

Among those upon whom the University of Cambridge conferred honorary degrees at a special congregation on June 4th, was the Poet Laureate, Dr. Robert Bridges, F.R.C.P.

Lord Beaverbrook's Gift to Charity

In celebration of his fiftieth birthday anniversary it was announced in London on May 25th that Lord Beaverbrook, noted Canadian newspaper proprietor of Great Britain, would donate a total of $315,000 to charity in seven yearly instalments.

Forty-five thousand dollars of this amount will be given to the St. Mary's Hospital Medical School, Paddington, London.

Burroughs and Wellcome's Exhibition

Messrs. Burroughs Wellcome and Company's west end exhibition rooms have been transferred from 54, Wigmore Street to more commodious premises at 10, Henrietta Street, Cavendish Square, W.1. Members of the medical and allied professions are invited to inspect the exhibits, which are on view daily from 9 a.m. to 6 p.m.; Saturdays, 9 a.m. to 1 p.m.

A Memorial to Sir Clifford Allbutt

A bronze bas-relief portrait in profile of the late Rt. Hon. Sir Thomas Clifford Allbutt, K.C.B., M.D., F.R.S., from 1893 to 1925 Regius Professor of Physic in Cambridge University, has been placed in the Allbutt Library of the Cambridge Medical School. The tablet is the gift of Lady Allbutt and was unveiled on May 18th by Sir James Crichton-Browne.

A Special Mission to Australia

The Prime Minister of the Commonwealth of Australia has, through the Secretary of State for the Dominions, requested the Minister of Health to liberate Dame Janet Campbell, the Senior Medical Officer for Maternity and Child Welfare at the Ministry of Health, to proceed to Australia in order to advise the Government on the organization and development of maternity and child welfare services for the benefit of the several States of the Commonwealth.

In view of the special importance of these services in the interests of the Empire as a whole, the Minister has acceded to the request and has agreed to set Dame Janet Campbell free from her official duties in this country for a limited time. She will probably leave England on this special mission towards the end of July.

The recognition bestowed on the physicians, surgeons, and specialists who attended the King with such untiring devotion during his Majesty's illness will be welcomed by the whole Empire. Lord Dawson of Penn is made a Privy Councillor; Sir E. F. Buzzard and Sir Hugh Rigby are created baronets; Dr. R. S. Woods, of the London Hospital, is knighted; Sir Frederick Stanley Hewett is made K.C.B.; Sir Humphry Rolleston becomes G.C.V.O., Dr. F. E. Shipway, K.C.V.O., and Mr. H. K. Graham Hodgson, Dr. F. D. Howitt, and Dr. L. E. Howard Whitby, M.C., are made C.V.O.; Dr. E. C. Dodds, Professor of Bio-Chemistry at London University, who was called in early this year, is made M.V.O.

The nurses, Miss Catherine Black and Miss Rosina Davies, of the London Hospital, Miss Elizabeth Adam Gordon, and Miss Nettie May Purdie are made M.B.E. for services during the King's recent illness.

NOVA SCOTIA

At the annual meeting of the Halifax Branch of the Medical Society of Nova Scotia, Dr. J. R. Corston was elected President for the ensuing term, and Dr. J. N. Lyons was elected Vice-president. Dr. N. H. Gosse was elected to the secretaryship.

Members of the "old school," who look back affectionately upon the days of the Halifax Medical College, cannot but feel a sense of regret at the demolition of the old college building, which has been razed to make room for the construction of residences.

The Halifax profession took advantage of an opportunity to honour Dr. George D. Stewart by tendering him a complimentary dinner on the eve of the Dalhousie Convocation. The dinner was held at the club house of the Halifax Golf and Country Club, Ashburn, and proved to be most enjoyable.

Dr. Haywood, Montreal, and Dr. Galbraith, Toronto, have recently completed an exhaustive survey of the Aberdeen Hospital, New Glasgow. Their visit followed shortly upon the distressing Cleveland hospital disaster, and their suggestion that x-ray films of inflammable type should be removed from the Aberdeen Hospital to an adjoining building was followed by immediate action. The receipt of their full report is awaited with interest.

The announcement of an advance in the rates charged to patients of the Nova Scotia Sanatorium brought forth a memorial from the patients in protest against the increased charge. The Minister has, in consequence, decided to postpone application of the new rate for two months, and meantime an investigation is to be made in the hope of finding a means of continuing the present rate. Many are of the opinion that an advance would be regrettable, and that a revision of rates, should, in the interest of the public health, be downward rather than upward. Unfortunately, an attempt is being made to attach political significance to the proposed change, so that the discussion is not quite dispassionate and is not entirely in the interest of the unfortunate victims of our most devastating disease.

The twenty-sixth of May proved rather disastrous to the motor cars of several Nova Scotia physicians. Dr. Johnston, of Great Village, and Dr. McCurdy, of Truro, were both summoned to attend victims of a

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motor accident, and in their rush to the scene of accident became involved in a head-on collision, which fortunately caused no injury to either doctor but seriously damaged both cars. On the same day, Dr. Wickwire, of Liverpool, on responding to an emergency call, found that he lacked some necessary materials and directed a messenger to take his car and go to his office for the things needed. The messenger miscalculated a turn in the road and went over an embankment with serious results to the car.

A few weeks ago Dr. O. S. Gibbs, of the Dalhousie Medical School, reported some of his experimental work in pharmacology to the Nova Scotian Institute of Science. As a drug which he was studying affected the heart in such manner as to interfere with his experiments, he removed the heart of a cat, substituted a rubber heart which was motivated by electricity, and kept the animal alive for several hours. The newspapers learned of the experiment and seized upon the dramatic element—the artificial heart—for a "feature." They gravely submitted that bad human hearts cannot yet be replaced with artificial organs. Of course, correspondents have expressed much shock at the inhuman treatment of cats. And there has apparently been general failure to realize that Dr. Gibbs' ingenuity opens up a means for the investigation of the action of drugs which may prove to be of very great value.

When Laennec gave the stethoscope to the world, it is quite unlikely that he had any conception that it would be utilized in the location of a distressed kitten. But the story comes from Glace Bay that a kitten's curiosity might have led to its untimely demise had Laennec not lived. The kitten contrived to get into the wall of a warehouse, but seemingly forgot the combination and failed to come back. It announced its plight to all who would listen, but none could be sure of just where it was. As the proprietor of the warehouse had little ambition to have unnecessary holes made in his wall, he welcomed the suggestion that a doctor's stethoscope be brought to the aid of the rescue party. In the skilled ears of an inspector of wiring, the instrument proved worthy of the confidence reposed in it. Kitty was located with great exactness, only one hole had to be made to extricate her, and a mother cat *et alia* were relieved of much anxiety.

Dr. R. M. Benvie has returned to Stellarton after a long period at travel and graduate work in England and on the continent.

Dr. I. M. Lovitt, of Yarmouth, signalized his recent return from an extended visit to South Africa by endowing the Digby Hospital in the sum of five thousand dollars.

W. H. HATTIE

NEW BRUNSWICK

On May 17th, the City Council of Moncton approved the plans of the new addition to the City Hospital. The Council guaranteed bonds to the extent of $150,000.00. The addition with the new heating plant will cost $275,000.00.

The various training schools of the province have, in the past month, held their graduating exercises. At St. Stephen, Dr. E. V. Sullivan addressed the graduating class. At Moncton, Dr. George Lyons was the medical speaker, and at Saint John, Col. M. MacLaren, M.P., M.D., and Dr. W. W. White were the speakers.

At the Convention of the National Council of Women, held in Saskatoon, on May 28th, Dr. Mabel Hanington, of Saint John, spoke on the subject of Mental Hygiene.

A reminder of war-time days appeared as a news item in the press recently, when it was announced that Mrs. Maude B. Duval, Montreal, widow of Dr. Joseph A. Duval, formerly of Saint John, N.B., had been awarded compensation in part payment for expenses arising out of the extraordinary chain of untoward circumstances following her husband's death. Among these circumstances was the fact that Mrs. Duval was a passenger on the ill-fated *Hesperian* when this vessel was torpedoed. Dr. Duval's body was lost in this maritime tragedy.

On June 4th, a conference of the Catholic Hospitals Association, of the Maritimes was convened in Moncton, with a very large attendance of nursing sisters, clergy and physicians. Chief among the medical items was a discussion led by Dr. H. L. Abramson, Provincial Pathologist, who dealt in a comprehensive manner with the relationships of pathological and bacteriological laboratory work to the functions of the hospital.

The May meeting of the New Brunswick Bureau of Health was held in Saint John under the chairmanship of Dr. G. G. Melvin, Chief Medical Health Officer, who presided in the absence of the Honorable Dr. H. I. Taylor. The success of the recent immunization clinics for the prevention of diphtheria was stressed, and it was announced that Dr. G. F. Jackson, of Winnipeg, was now in the province to learn at first hand the methods and results of this campaign.

Dr. B. H. Dougan, M.L.A., of Harvey Station, figured prominently in the sporting news recently, when it was announced that he had been successful in landing a five and one-half pound trout from Harvey Lake on Victoria Bay. This, to date, sets a record for medical anglers in New Brunswick for this year.

The delegation from New Brunswick to the Canadian Medical Association meeting was, as was expected, larger than usual. The number proceeding by motor was considerable.

Dr. and Mrs. Frank Stevenson, of Saint John, spent two weeks recently in New York.

Dr. L. G. Pinault was in attendance at the International Rotary Convention at Dallas, Texas.

Dr. C. G. Main, of West St. John, was recently elected President of the Carleton Branch of the British Empire Service Legion.

A. STANLEY KIRKLAND

QUEBEC

Letters patent have been signed by His Honour Lieutenant-Governor Carroll incorporating the new 500-bed hospital which the University of Montreal will build on the slopes of the Mountain in the near future. The hospital will be designated as "L'Hôpital Universitaire de Montrél Incorporé." The aim of the corporation, which will have governors distinct from those who govern the university itself, is to maintain and administer a hospital with its branches and annexes where the sick, without distinction of faith or nationality, will be received and treated, and to promote interest in medicine and scientific research.

Valuable information and data for the benefit of the health units now operating in the Province of Quebec are being collected by Dr. Alphonse Lessard, Director of the Quebec Provincial Bureau of Health at various institutions in the United States. Dr. Lessard is now at the Rockefeller Institute of New York. The health unit system, now operating in the province, and known as County Health units, consists of the establishment in a county, or in two small neighbouring counties, of what might be called a bureau of health in miniature. The unit is composed of a full-time medical officer, two or more public health nurses, a sanitary inspector charged with the enforcement of health regulations and with the education of the municipal officers, together with a secretary to handle clerical work of the office, which is generally located in the principal town of the county. The whole population of the country is thus submitted to constant supervision. There are now eight of these units functioning in the province. Four more are soon to be in operation. In the counties where health units have been in operation for a period of two or three years, the general death rate has been reduced and especially the infant mortality rate and the death rate from contagious and infectious diseases, with also a marked reduction in the number of cases, this being largely due to better education of the public, immediate control of epidemics, free distribution of serums and vaccines, and free ambulant clinics for tuberculosis and child welfare.

The foundation of a Jewish general and maternity hospital is assured before another year, it was stated at a meeting held at the Baron de Hirsch Institute recently, when it was decided to institute a drive to raise the necessary funds to develop the project. A committee was named and plans laid to advance this adjunct to Hebrew life in the city of Montreal. A sum of $500,000 is needed. Of this amount about $100,000 has already been raised. The Jewish Loan Syndicates have pledged about $35,000. An additional $20,000 is forthcoming from the members of the Montreal Clinical Society and $10,000 from the Sir Herbert Samuel Hospital; in addition a government grant of $200,000 may be expected from the province, and a balance of $135,000 would be asked for in the drive.

The increase in the toll levied among the citizens of Montreal by diphtheria, and a deficit of $14,840 in the operating expenses of Alexandra Hospital were features of the report submitted by Dr. A. D. Blackader at the annual meeting of that institution, held recently. Scarlet fever cases of a severe type were also cared for in large numbers. The mortality rate of diphtheria rose from 6.8 per cent in 1926 to 8.26 in 1927, and to 10.4 per cent during 1928. Dr. Blackader called attention to the fact that the increase in the severity of type of diphtheria occurred in Great Britain and other European countries in the United States as well as in Canada. Dr. Blackader reminded those present at the meeting that the Alexandra Hospital of to-day is practically the same size as it was twenty years ago when Montreal had only half of its present number of inhabitants. An additional pavilion is very badly needed, as numerous requests for beds have to be refused by the superintendent. During the past year 875 cases of scarlet fever were admitted of which twelve died. There were 118 cases of measles admitted, of which three died; 83 cases of erysipelas, of which eight died; five cases of whooping cough; seven of mumps; eleven of chickenpox; and one of smallpox; all requiring special isolation. Considering the severe types of the diseases treated during the year, Dr. Blackader said that the staff should be congratulated for keeping the mortality rate so low, for out of 1,599 patients received there were only 72 deaths, and of these 34 were moribund on admission.

The valuable work that is being done at the hospital erected and maintained by the Kiwanis Club of Montreal at the Shawbridge Boys' Farm and Training School was emphasized in the report presented to the special meeting of the administrative committee of the school, held under the chairmanship of Mr. John McMillan. Not only is the hospital used for the treatment of cases of illness, but with the equipment provided and the voluntary services of medical men from Montreal every boy in the school is submitted to examination by a psychiatrist, while such matters as vaccination, dentistry, and blood tests, are carried out at the Kiwanis Hospital. During last year there were 220 admissions to the hospital, and, despite the fact that some of the cases were serious, requiring night and day nursing, not a single death was recorded. The out-patient treatments for the year numbered 2,049. Fifty-nine new boys passed through hospital for examinations, while 85 dental treatments were given by Dr. Blacklock and 59 blood tests made by Dr. Anderson, who also vaccinated 24 boys. Other boys diagnosed and sent to the Royal Victoria Hospital for special treatment numbered 38. Members of the committee expressed their appreciation of the valuable adjunct the Kiwanis Hospital is to the school. Financial reports were submitted for the first three months of the year and showed continued improvement in the financial condition of the institution, which is now being administered on a budget system.

The Provincial Government will give hundreds of thousands of dollars to enable the Lake Edward Sanatorium and the Laval Hospital to add 100 beds to the number they already possess. While this interesting piece of news was given out some time ago by Premier Taschereau, Dr. Alphonse Lessard, who is in charge of the provincial health work, stated reecntly that work had already started on the Lake Edward "San." A new wing is being built here to accommodate 100 beds and it is hoped to have the work completed for the autumn. The new wing will be fireproof. At the same time the present wing is being remodelled. When everything is completed, the sanatorium will have a 200 beds capacity, instead of 100, as at present. Laval Hospital will soon have its work started on the extra beds.

At a meeting of the Joint Hospital Committee of the Montreal General and Western Hospitals, it was decided that considerable extension would be made to these two hospitals. It is believed that something like $1,500,000 will be spent on this work. Definite in-

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formation as to the plans in view, however, is not yet available. Col. Herbert Molson, chairman of the committee, when asked for details of the proposed extensions, said that nothing definite had yet been decided, but that it was probable that something along the lines of extension would be done.

The urgent need for larger accommodation was stressed at the annual meeting in the St. Mary's Memorial Hospital. It was announced that 900 patients were admitted to the hospital during the year ending December, 1928. The financial statement showed that expenditure for the year amounted to $49,056, with receipts of $33,726, leaving a deficit of $16,581. It was shown that 831 patients were discharged of the 934 treated; 591 were Canadians, and 300 foreigners; 265 were Protestants, 654 were Catholics, and 15 were Jews, while there were 17 of other denominations. The daily average of patients was 34. Dr. J. L. D. Mason, Chief Medical Officer, showed that there was an increase of two over the previous year, or 285 patients in all.

Much improvement in health conditions in the Province of Quebec is shown in the February report of the Provincial Bureau of Health, just to hand. The report, while preliminary, shows that the mortality rate dropped back to normal, deaths due to influenza and pneumonia having fallen off. An indication of what this epidemic exacts in the province is given by the figures, showing that of 2,935 deaths in February 614 were due to the two causes mentioned, making a specific death rate of 287.94. The comment of the Bureau is that "In its whole, this preliminary report is relatively favourable, if it is considered that the month dealt with had only 28 days and that it registered the end of the above mentioned epidemic. Its birth rate is actually low, but this rate will increase when all reports are at hand. Its marriage rate is lowering on account of the fact that more than half the month is included in Lent. Its infant mortality, with its rate of 133.1 per 1,000 living births, shows a good decrease over January, during which it was 172.9. The February rate of infant mortality will also decrease slightly when all birth reports are received."

Gerard Gardner, B.A., Sc.D., of the University of Montreal, who has already made discoveries both here and at the Institut Pasteur, Paris on micro-organisms, is leaving shortly for Paris, to continue there the research work undertaken by G. Buchanan on the germ of infectious jaundice. Dr. Gardner has already found the germ in rats and he is interested in its relations with tuberculosis. The principal aim of his work this year, while in Paris, will be to try to obtain pure cultures of a new spirochæte he has discovered in hay.

GEORGE HALL

Dr. Arthur Vallée, Professor of Pathological Anatomy and of Bacteriology at Laval University has just been elected a Fellow of the Royal Society of Canada in Section ii, that of French History and Literature. Dr. Vallée is the author of "Causeries" and "Michel Sarrazin." The latter notable work was discussed at length by Dr. Maude Abbott in our pages some months ago (*Canad. M. Ass. J.* **19**: 600, Nov. 1928).

Drs. A. H. Desloges, Medical Director of Hospitals for the Insane, Reform and Industrial Schools of the Province of Quebec; Drs. Salluste Roy, Professor at Laval University, Devlin, Plouffe, and O. Noël have been elected Foreign Associate Members of the Clinical Society for Mental Medicine of Paris.

ONTARIO

An invitation was extended by the Academy of Medicine of Cleveland, Ohio, to the Fellows of the Academy of Medicine of Toronto, to attend a meeting of the former body, arranged for the evening of May 17th. The program for this meeting was arranged by the Program Committee of the Toronto Academy. A warm welcome was expected by the Canadians. In a letter received from Cleveland the following passage occurs: "There is an atmosphere of expectancy among our Academy members in anticipation of the Toronto visit, and I am hoping that a large delegation will be able to come. An inspection of our new Medical Library building, the new medical centre under construction, and two hospitals and the medical school already completed, with clinics in many hospitals, should make the trip worth while." It is much to be regretted that this rapprochement never took place, owing to the terrible disaster that took place at the Clinic Hospital in Cleveland on that date.

The annual report of the Program Committee of the Toronto Academy of Medicine shows that twelve regular meetings were held with an excellent attendance; thirty-eight sectional meetings and five clinical meetings were also held. The Library and Historical Evening, on January 8, 1929, was particularly worthy of mention, as the Harvey Historical Film was presented by Professor Charles Best, to whom it was released by the Royal College of Physicians of London. The following visitors honoured the Academy by addresses on various occasions: Drs. Hugh Thursfield, London, Eng.; F. Maurice McPhedran, Philadelphia; E. W. Archibald, Montreal; Mr. H. W. Carson, London, Eng.; Col. L. W. Harrison, London, Eng.; Drs. H. J. Gerstenberger, Cleveland; Donald C. Balfour, Joseph C. Bloodgood, Baltimore; J. W. White, New York; W. B. Howell, Montreal; Joseph King, New York; Luther C. Peter, Philadelphia.

The relations that exist, or do not exist, between the private practitioner and the various health bodies and associations that are now interesting themselves in public health and welfare are not always the best that could be devised, and, accordingly, attempts are now being made in different parts of Canada to bring about more harmonious action. The annual report of the Committee on Public Health Relations of the Toronto Academy of Medicine, given here, will serve to show something of what is being done in Toronto in this direction.

"During the year 1928-1929 your Committee met eleven times. The Medical Officer of Health was interviewed in regard to the report forwarded to him by Council embodying the results of the Committee's investigations into some complaints by private practitioners *re* the activities of the Department Public Health. Full consideration of the report was promised and a reply assured. This came to hand in due course and as a result of the investigation, the reply and conferences, many difficulties have been smoothed out and a better understanding between the Medical Officer Health and the private physician assured.

New forms have been drawn up and approved by both the Academy of Medicine and the Department of Public Health for use in the child welfare centres. Contact has been established by the Academy of Medicine with the Home and School and Child Welfare Councils and the Academy is endeavouring to aid them in their propaganda in regard to the claims for better

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care of the pre-school child. In doing this, however, care is being taken to see that the rights of the general practitioner are not infringed upon since it was soon found that these enthusiastic and useful organizations in their endeavour to do good to one section of the community were somewhat inclined to overlook the just claims of another and important section of the community, namely, the family physician. Your Committee have every hope that these difficulties will be overcome and have undertaken to provide speakers, addresses, *etc.*, for the use of the Child Welfare Council in their propaganda amongst the members of various organizations in this city.

Again your committee would like to urge upon the private physician the necessity of his co-operation in this matter and seek in every way to educate his own patients as to the necessity of periodic examination for all members of a family.

Also we urge the keeping of records of all patients and hope soon to present for your consideration a simple history form which will be of assistance in this most necessary phase of a practitioner's work, not only from the standpoint of reference, but of research.

May we as a committee urge again your co-operation in these matters so that while we protect the rights of the practitioner and see that there is no sudden and unnecessary invasion of these rights, we, as a profession, do not lag behind in the procession of progressive scientific medicine.

All of which is respectfully submitted.

HARRIS MCPHEDRAN,
Chairman, Committee on Public Health Relations."

It is announced that St. Michael's Hospital, Toronto, has decided to conduct a post-graduate course for one week during the month of September. Further details will be published later. N. B. GWYN

Professor Andrew Hunter, who has been appointed to the Gardner Chair of Physiological Chemistry at Glasgow University, was recently the guest of honour at a dinner given by his colleagues in the Faculty of Medicine of Toronto University at the York Club.

Dr. F. S. Burke, formerly Director of Medical Services, Department of Public Health, Toronto, is now attached to the staff of the Department of Pensions and National Health at Ottawa.

MANITOBA

Dr. P. H. T. Thorlakson read, by invitation, a paper on "Ulcerative colitis" before the American Proctological Society at Detroit, on May 13th.

The Medical Research Committee has recently issued a comprehensive report on their activities in connection with the 1928 epidemic of poliomyelitis in Manitoba. The value of convalescent serum in treatment of the disease prior to the onset of paralysis was stressed.

The Minister of Health and Public Welfare has issued a report prepared by the Public Welfare Committee on the tuberculosis situation in Manitoba.

Grace Hospital, Winnipeg, has recently installed a Victor-Snook x-ray apparatus of the latest type.

Dr. G. B. Roatta, Councillor of the Federazione Nationale Italiana Facista per la contre la Tuberculosi, and director of dispensaries in Florence, and Dr. Armand-DeLille, Secretary General of the Grancher Foundation, and an outstanding French pædiatrist, addressed a meeting of medical men under the auspices of the Manitoba Medical Association on June 3.

Hon. Dr. E. W. Montgomery, Minister of Public Health, addressed the Junior Board of Trade of Winnipeg on May 6, taking for his subject "A better breed of men." He discussed the sterilization of mental defectives.

During the present session of the Legislative Assembly the Minister of Health has introduced bills providing for the licensing and regulation of private hospitals, and for compulsory vaccination and anti-typhoid inoculation in mining and railway camps. The latter bill was prompted by the outbreak of a number of cases of typhoid and of some cases of smallpox in camps on the line of the Hudson's Bay Railway.

On May 4 seven undergraduates were installed as charter members of the PHI RHO SIGMA medical fraternity, and subsequently another medical undergraduate was initiated. The installing officers were Dr. Ralph W. Elliott of Cleveland, Ohio, general secretary, and Dr. Gordon Kelly of Toronto. The Manitoba chapter can be termed a daughter chapter of the University of Toronto.

On May 17, at the closing meeting of the Winnipeg Medical Society for the term 1928-29, the following officers were elected for the ensuing year: *President*, R. Rennie Swan, M.B., Ch.B.; *Vice-president*, F. A. Benner, M.D.; *Secretary*, H. D. Kitchen, M.D.; *Treasurer*, John M. McEachern, M.D.; *Trustee*, F. J. Hart, M.D.

Dr. A. M. Davidson showed a motion picture film by Col. L. W. Harrison, British Ministry of Health, dealing with the "Clinical signs, pathology, diagnosis and treatment of syphilis." ROSS MITCHELL

SASKATCHEWAN

A post-graduate team, consisting of Drs. J. W. Richardson, and W. H. McGuffin, of Calgary, toured Saskatchewan in May. They spoke at ten places to appreciative audiences. Dr. Richardson discussed "Gastric and duodenal ulcers" and "Gall-bladder disturbances"; Dr. McGuffin spoke on "X-ray and radium therapy," and on "Interesting conditions of the gastro-intestinal tract."

The Vital Statistics Division of the Saskatchewan Department of Public Health has issued a questionnaire to the profession regarding deaths from diphtheria. There are forty-two questions to be answered regarding each death, one of which is "Was there negligence in this case, in your opinion? on whose part,—parents, physicians, Health Department?" The Minister of Public Health, Hon. Dr. J. M. Uhrich, stated at the Trustees Convention that each death from diphtheria was a case of suicide or of homicide, and should be investigated as such. The government has evidently begun in earnest to combat the lethargic ignorance

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which prevents children receiving the benefit of immunity from diphtheria.

Dr. Murray Thompson, of the Social Hygiene Council of Toronto, in his address on Public Health before the National Council of Women in Saskatoon, told of the lessening of the incidence of venereal disease in the larger cities of Canada which followed the establishment of free treatment clinics, operated jointly by the provincial and federal governments since 1917. He also discussed the proposed bill which has passed its second reading in the Senate to make a medical examination compulsory before marriage. Dr. Edna Guest, Chairman of the Committee on Public Health in the National Council of Women, in her report, stated that the time was not yet ripe for the pasasge of such a bill. The discussion that followed proved that the Council thought it advisable to go slowly in this matter of law making, and not to burden the people with a law that would be unpopular even if it were a good one. Much education of public opinion should be done so that health before marriage is demanded by the people.

Dr. Mabel Hanington, of St. John, N.B., convenor of the Committee on Mental Hygiene in the National Council of Women, advised the women to consider the matter of sterilization of the mentally defective carefully and not take it as a solution of all the problems arising in regard to these cases. The members from Alberta were most enthusiastic about this measure, but the women from the other provinces adopted a more conservative viewpoint, and resolved to watch the experiment in Alberta before urging the matter upon their own provincial governments.

At the May staff meeting of the Regina Grey Nuns' Hospital Dr. J. V. Connell presented a case of nephrolithiasis in a girl of sixteen. Operation showed a number of stones in the kidney pelvis varying in size from a bean to a walnut. Seven years before the same girl had had a stone removed from the opposite kidney. Recovery was uneventful. Dr. J. S. Ritchie reported a death from brain abscess following empyæma; Dr. W. A. Harvie reported a death following coronary thrombosis; Dr. B. C. Leech reported a case of early pregnancy resulting in incarceration of the uterus, which recovered after pregnancy.

LILLIAN A. CHASE

ALBERTA

During the latter part of April a tour of Alberta was made by representatives of Manitoba University, under the auspices of the Canadian Medical Association's extra-mural post-graduate grant. Medicine Hat, Lethbridge, Calgary, Drumheller, Red Deer, Stettler, Camrose, Vegreville, and Edmonton were visited. Dr. B. H. Olson, Lecturer in Clinical Medicine, was unable to be present, owing to illness.

A. M. Davidson, M.B. (Edin.), Lecturer in Medicine and in Dermatology, gave lectures on venereal and skin diseases. Two excellent films prepared by Colonel L. W. Harrison, R.A.M.C., of London, England, were shown. This splendid method of teaching this subject was generally appreciated by those who attended, and the number was large at Calgary. At Edmonton more than one hundred were present. In some of the centres visited physicians travelled forty, fifty and even eighty miles to attend the meetings, which are more than ever being appreciated by the profession throughout the province. Requests have been received for an enlargement of the program so that other points will be reached, which so far have not been visited.

Many of the former difficulties which the medical profession in the province had formerly with the Workmen's Compensation Board are being eliminated, mainly through the action on the part of physicians in coming to an agreement on the basis of fees, and a more reasonable attitude on the part of the Workmen's Compensation Board, though the physicians on their part have shown much leniency by making no demur when in each case a number of visits or treatments have been disallowed.

The Council of the College of Physicians and Surgeons sent out a plebiscite to the physicians in the province, to obtain an expression of opinion as to whether the Government Travelling Tonsil Clinics should be taken over by them, thus avoiding the necessity of the Government Clinic visiting districts already supplied with physicians. The replies have been received and were dealt with by the Council of the College of Physicians and Surgeons at the meeting held at Edmonton, May 25th.

The question of general school health inspection was also presented in a plebiscite. The reason that this matter was brought forward was on account of the United Farmers of Alberta passing a resolution to the effect that in their opinion the Provincial Government should undertake this work. The results of the plebiscite will also be taken up by the Council.

The Council of the College of Physicians and Surgeons of Alberta met recently in Edmonton and had an interesting interview with the Hon. George Hoadley, Provincial Minister of Health.

The Council stated that this representative body was prepared to suggest to the medical profession in the province, that they should undertake the work now being done by the Government Travelling Tonsil Clinic, on the basis of the present fees to the patients, namely, $15.00 for a tonsillectomy operation and other minor surgical work in proportion. Instead of the work being done in school houses or community halls they proposed that all shall be done in hospitals under the most favourable conditions to the patients. Last year the Government Clinics cost the province $10,000.00 in addition to all collected from the patients and almost all paid last year, which is quite different from the customary way with private accounts.

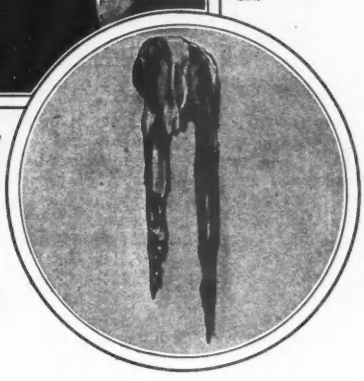
The Council made the proposal that the Provincial Government should assume all expenses for hospital care and also pay for the anæsthetists' fees. This matter was taken under advisement by the Minister.

According to the laws pertaining to public health in the province it is provided that health officers will be appointed by the Municipalities. This, however, is not always acted on. Moreover, in many instances the medical officer of health is paid only by a nominal salary. The Council of the College of Physicians and Surgeons went on record that all districts organized and unorganized should have, where possible, medical officers of health and made this recommendation to the Minister of Health. It is quite apparent to the profession that if this were done and it were known who were appointed, infectious diseases would be reported earlier, and epidemics thus prevented or checked.

Another point in this connection where objection was raised was in regard to cases where serum antitoxin is given to patients who are not in hospitals. In this class of case the government holds the physician responsible for the cost of the antitoxin, when

Left: Cod with enlarged Liver

Below: Prime Livers constitute 1/7 the weight of the Cod



Food of the Newfoundland Cod makes Vitamin Potency in Cod Liver Oil

THIS is a typical cod, the liver of which is used in the making of Mead's Standardized Cod Liver Oil—plain and flavored. The belly is enlarged with a huge liver—1/7 the weight of the fish. *One seventh the weight of the fish* from which the oil is rendered in the proportions of 3 gallons of oil from 5 gallons of livers, when the fish are in the best physiological condition.

In Newfoundland, Cod Liver Oil production under the Mead Johnson policy is a leading industry. Codfish, dried, are by-products. Quite the reverse from other fisheries. The Newfoundland Cod after a season of gormandizing on caplin, squid, herring and sea plant life or algae, are in excellent condition for oil production.

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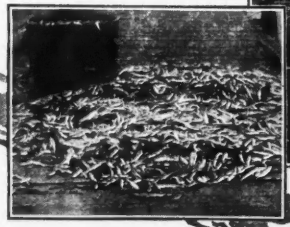
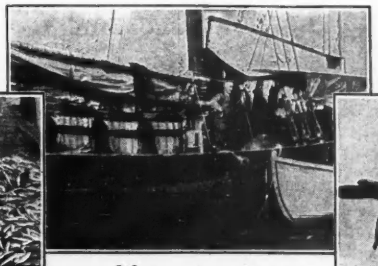
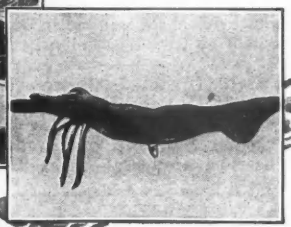


Caplin



Oil on way to market



A Squid

the patients pay the cost. The Minister of Health promised to give this matter his attention.

The Council called the attention of the government to the fact that provision should be made for government run psychopathic hospitals. This was supported by a report in the late Ponoka Mental Hospital investigation. The government is of the opinion that rather than have separate institutions in two centres of the province it would be better to arrange with the municipal hospitals in Calgary or Edmonton so that there will be a psychopathic ward in each hospital, and preferably on the top floor of each. It is felt that it would be more satisfactory to the patient and to the physician in charge of the case. It is understood that as soon as possible some arrangement will be made.

At the annual meeting of the Calgary Medical Society, held on April 25th, the following officers were elected for the 1929-1930 sessions: *President*, Dr. W. S. Quint; *Vice-president*, Dr. R. G. Williams; *Secretary*, Dr. W. H. McFarlane; *Treasurer*, Dr. George A. Anderson; *Executive Committee*, Drs. A. S. Estey, J. W. Richardson, and E. Sisley.

Incorporation of the Society under the Benevolent Societies Act, was announced as having taken place during the past year.

The members of the Calgary Medical Society listened to two most interesting and instructive addresses on the evening of June 5th by Dr. Armand-DeLille of Paris, France, and Dr. G. Roatta, of Florence, Italy. These were given under the auspices of the Canadian Medical Association post-graduate grant. The subject of tuberculosis was covered in great detail in many of its respects by Dr. Armand-DeLille. Dr. Roatta dealt with the public health aspects of this disease as dealt with in Italy.

The following physicians have recently registered in the Province of Alberta: T. E. Kirke, Calgary; F. R. G. Langston, Marwayne; W. Currie, Edmonton; F. E. Brown, Taber; J. W. Giffen, Strathmore; R. H. Hicks, Craigmyle; H. W. Toby, Claresholm; G. C. Bradley, Sterco; B. J. Hallowes, Queenstown.

Dr. Harold W. McGill, M.C., of Calgary, who recently underwent a serious operation at the Calgary General Hospital is now making good progress towards recovery.

Dr. Frederick Hogan, who for many years has been practising in the Yukon, intends settling in Alberta.

Dr. Gordon Douglas, formerly of Edmonton, but who is now attached to the Johns Hopkins Medical School, Baltimore, has been visiting his old friends in Alberta.

Drs. J. W. Richardson, F.R.C.S. (Edin.), and W. H. McGuffin, of Calgary, who recently made a tour of Saskatchewan under the Canadian Medical Association post-graduate scheme have returned home. They state that they had good attendance at the meetings and had a most enjoyable time. They gave lectures at nine different towns during the trip.

Dr. M. E. Busby has resigned his position at the Central Alberta Sanatorium, and has left for the Coast to take post-graduate work in radiology before returning to Alberta to practise this specialty.

Dr. W. Bigelow, who has practised in Taber during the past two years, has settled in Lethbridge. His practice has been taken over by Dr. T. E. Brown, of Depot Harbour, Ontario.

Dr. M. E. Tiffin, of Nanton, recently moved to Edson, where he will practise.

Dr. Ernest A. Hunt, son of Mr. W. G. Hunt, Assistant Secretary of the Alberta Medical Association, has recovered from his serious illness, and has joined the staff of the Brett Hospital at Banff, as assistant to Dr. J. D. Robinson.

Dr. J. H. Egbert has been spending some time in Calgary, having returned from Banff, where he took charge of Dr. J. D. Robinson's practice during his absence in California.

Dr. L. C. Morris, of Brule, has returned from Boston and New York, where he took post-graduate courses in physiotherapy. He will not return to Brule, as the mines have been closed.

G. E. LEARMONTH

Mark Twain has gone down in history as the man who was able to send out the information, on one occasion, that the report of his death had been grossly exaggerated. Dr. W. H. S. Scott, of Vauxhall, Alta., however, takes the lead over the American humourist, for on two separate and distinct occasions premature word of his demise has been published in the newspapers of the country. The physician, in active practice at Vauxhall, holds that not only is he still walking the earth but that he expects another 30 years of existence.

"I am still alive and in A-1 condition," stated Dr. Scott. "I have about thirty years yet to run around the country. I am not exactly sure who wants me dead but this is the second time in eight months that my death has been published in Toronto papers. I am not worrying about it."

BRITISH COLUMBIA

The commission recently appointed by the provincial government to investigate the question of health insurance has held a number of meetings, but has not yet held any public sessions.

On May 7th Dr. H. E. Ridewood, of Victoria, addressed the Fraser Valley Medical Society at New Westminster on "Simple mechanics of the pleural cavity." The meeting was very well attended and concluded the most successful season that the Society has enjoyed.

On May 9th fifty medical men from Seattle met a similar number of the Vancouver profession in the annual golf match for the Perry cup. The local team were successful in winning the cup, which has been held by Seattle for years, from the visitors. A most enjoyable day, with beautiful weather, terminated in a dinner, following which the guests were escorted to their steamer.

During the last week in June the annual summer school of the Vancouver Medical Association was held in the Hotel Georgia. The list of teachers comprised Dr. Thos. Addis, San Francisco; Dr. C. H. Best, Dr. W. G. Gallie and Dr. Norman B. Gwyn of Toronto; Dr. Oswald S. Lowsley, New York; and Dr. Ernest Sachs, St. Louis.

Dr. F. C. Bell has resumed his duties as Super-

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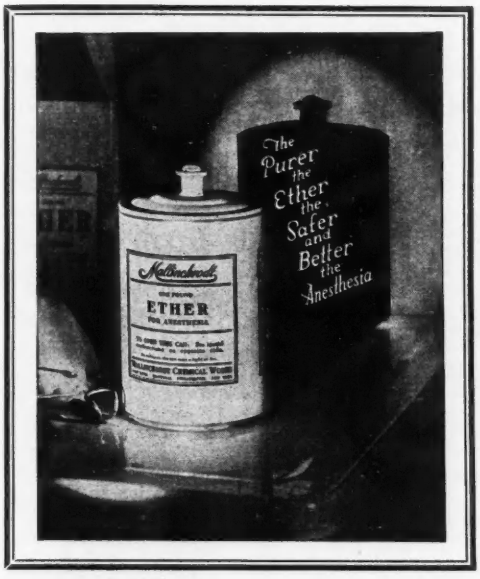

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intendent of the Vancouver General Hospital, following a protracted illness.

Dr. W. H. Wood of Greenwood was a recent visitor to the coast.

Dr. L. H. Appleby paid a visit to Rochester, Minn. recently. From there he travelled by air to Chicago and Louiseville, Kentucky, and home.

Dr. S. Bonnell recently paid a visit to Calgary, accompanying Mrs. Bonnell on the first stage of a trip to England.

Dr. R. B. Shaw, recently of Essondale, is at present acting as locum tenens at Bella Bella.

Dr. J. A. Minorgan has joined the staff of the Provincial Mental Hospital at Essondale.

Dr. G. S. Gordon has left for an extended visit in England and on the continent.

Dr. E. J. Sheffield, recently of Coalmont, is doing post-graduate work in the east. C. H. BASTIN

GENERAL

The Post-Graduate Course at Graz, Austria

The Dean of the Medical Faculty of the University of Graz calls attention to the advantages of his city for residence and for medical study. Graz is a fine city of 160,000 inhabitants, 170 miles south of Vienna, (4 hours by train) with many fast trains daily. It is situated in the foot-hills of the Alps, and has a delightful climate, the nights in summer being pleasantly cool.

The general hospital of 1,600 beds is one of the newest in central Europe, fully and modernly equipped, and divided into separate buildings for each major specialty. Recognizing the successful methods of Vienna in giving medical instruction to English-speaking medical men, the Faculty of Graz has drawn up a comprehensive plan of post-graduate study, embodying the following points:—

All courses will be given in English.

There will be a minimum of didactic and theoretical work, and the clinical aspect and bed-side instruction will be stressed.

The courses will be of moderate cost.

After a specified length of stay, to ensure a well-rounded out grasp of the specialties, a diploma will be granted.

All necessary information can be obtained by writing to Docent Dr. Knaus, Landeskrankenhaus, Graz, Austria.

International Medical Post-Graduate Courses in Berlin

These courses are arranged with the help of the medical faculty of the University by the Lecturers' Association for Medical Continuation Courses and the Kaiserin Friedrich-Haus. Part of the courses take place permanently; part only in October, 1929 and March, 1930.

I. Permanent Courses

1. Of monthly and semi-monthly duration dealing with all kinds of branches of medicine.

2. Courses as guest-assistants in clinics, hospitals and laboratories during two or three months and longer for gentlemen desiring to do practical work under systematic supervision.

II. Courses in October, 1929

1. Group course: "Progress in internal medicine with special regard to stomach and intestinal diseases" (from Oct. 1st-12th); fee RM. 75.

2. Course in Neurology, Psychiatry and Psychology (from Oct. 14th-19th); fee RM. 50.

3. Post-graduate course in Diseases of Children (from Oct. 14th-26th); fee RM. 100.

4. Course dealing with the chemical and physical foundation of medicine (from Oct. 21st-26th); fee RM. 50.

5. Post-graduate course for throat, nose and ear specialists (from Oct. 7th-19th; relatively 26th); fee RM. 100.

6. Single courses on all special fields of medical science, including practical work.

III. Courses in March, 1930

For March, 1930, the following courses are contemplated:

A course on the different branches of Internal Medicine.

A course on the progress in the domain of Surgery.

A course on Skin and Venereal Diseases.

An X-Ray course.

A course on Obstetrics and Gynæcology.

The courses are held in German, but numerous professors are able to lecture in the English, French and Spanish languages.

The information bureau of the Kaiserin Friedrich-Haus für das ärztliche Fortbildungswesen, Berlin, N.W. 6, Luisenplatz 2-4, is instrumental in procuring suitable lodgings, gives information as to cost of stay, arranges the attendance in clinics at operations, etc., and, on request, sends detailed syllabuses.

Thirteenth International Congress of Ophthalmology

The thirteenth International Congress of Ophthalmology will be held at Amsterdam from September 5th to 13th under the presidency of Professor van der Hoeve of Leyden. In connection with this congress committees have been appointed to prepare reports on the following subjects: the examination of visual acuity; perimetry; notation of the cylinder-axis; examination of the light sense; standardization of the visual examination of railwaymen, motor drivers, seamen, and airmen; and uniformity in the program of ophthalmological studies. The fee for membership of the congress is twenty-five Dutch florins. Further information can be obtained from the Secretary of the Editorial Committee of the Congress, Wilhelminagasthuis, Amsterdam.

Sir StClair Thomson

Sir StClair Thomson's election as a corresponding member of the Academy of Medicine is the highest honour that can be bestowed in France on a medical man. The election has been most cordially approved by the profession, happy to greet a man who is as popular in France as he is in Great Britain, and who is in every sense of the word quite at home on this side of the Channel. We trust that his perfect knowledge of French may allow him, from the Academy platform, to maintain and develop the links holding together the British and French medical schools. We call our academicians *les immortels*; Sir StClair is highly qualified to add to immortality a quality that it may sometimes seem to have lost—perpetual youth.—G. Monod in *Brit. M. J.*

Miss Anne Hartley, R.R.C.

It was announced from Geneva on June 12th that

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Miss Anne Hartley, Royal Red Cross, Matron-in-Chief of the hospitals of the Canadian Department of Pensions and National Health, has been awarded the Florence Nightingale medal. The award goes biennially to a few nurses in different countries who have rendered conspicuous service in time of war or public calamity.

Miss Hartley, a graduate of the Toronto General Hospital, served in France, England and Salonika from 1915 to 1919 and received the Royal Red Cross medal in 1916, with bar in 1919. Last January she was appointed Matron-in-Chief for the department's hospitals.

Honour to Theodor Billroth

Austria has struck a coin, a two shilling piece, bearing the image of Theodor Billroth, 1829-1929. Probably this is the first time that a nation has issued a coin to honour a medical man purely for his professional attainments.

Book Reviews

Diseases of the Liver, Gall-Bladder and Bile-Ducts. Sir Humphry Rolleston, Bart., K.C.B., M.D., Hon. D.Sc., F.R.C.P., and John William McNee, D.S.O., M.D., D.Sc., F.R.C.P. Third edition. XIII and 884 pages. Four coloured plates and 87 figures. Price 42/- net. Macmillan and Company Limited, London, 1929.

All will welcome the appearance of the third edition of Sir Humphry Rolleston's great work on the liver, in preparing which, this time, he has had the valuable assistance of Dr. J. W. McNee. It is seventeen years since this work appeared before, and much has been discovered and recorded about the liver during that period. The volume is very timely, for we are just now beginning to apprehend the great importance of the liver in metabolism. In fact, this organ bids fair to regain the pride of place which it lost when Galenism went, somewhat undeservedly, into the discard.

From its first appearance Sir Humphry's book has been, for English readers at least, the final court of appeal on any matter relating to the liver and its accessories, and it is gratifying to find that it has been brought up to date. The work now contains useful summaries of the anatomy and physiology of the liver and biliary tract, which will do much to assist in the understanding of the newer conceptions of hepatic and biliary disease. The important subject of jaundice has been reconsidered, and the new diagnostic procedures, the tests for disorders of the hepatic function, and cholecystography, are dealt with in a most helpful way. No phase of hepatic and biliary pathology is left untouched, but the chapters that appeal to us most are those dealing with jaundice, cirrhosis, cholecystitis, and cholelithiasis. The development of our ideas on these subjects is dealt with historically, and it is easy to see where we stand at the present time. Two special points may be referred to in the matter of calculus formation the old view of Naunyn has given way to the conception of Aschoff and Bacmeister, who held that there are two types of gall-stones, the non-inflammatory or metabolic, and the inflammatory, a view that is now practically universally accepted. In regard to the difficult question as to the importance of alcoholic excess in the causation of portal cirrhosis, the authors, after a careful statement of the evidence *pro* and *con*, come to the following conclusion: "It may safely be held that alcoholism is frequently an antecedent condition, but that *per se* alcohol has no specific action on the liver except fatty degeneration. It gives rise to cirrhosis in a secondary manner, either by leading to the production of sclerogenic poisons, or by enabling such poisons to have full sway on the liver. The importance of alcoholism has been rather exaggerated, and it is not sufficiently recognized that other factors may cause cirrhosis, and that a congenital or acquired want of resistance on the part of the liver itself is, though hard to estimate, probably of great importance." This, it may be remarked, is substantially the teaching in Montreal of the late Professor J. G. Adami.

It would be difficult to praise this work too much. It is comprehensive, simply written, and is much more than a treatise on the special pathology of the liver and biliary passages. It deals with diagnosis and treatment as well. The references to the literature are abundant, and chapter and verse are given in this connection; we are pleased to see Canadian work recognized. The illustrations are good and the index excellent. The treatise should be in the hands of every clinician.

A. G. NICHOLLS

Surgical Pathology. William Boyd, M.D., M.R.C.P. Ed., F.R.S. Can., Professor of Pathology, University of Manitoba. Second Edition; 933 pp.; 15 coloured plates and 474 illustrations. Price $11.00. London and Phila., W. B. Saunders Co., 1929. Canadian Agents; McAinsh & Co. Ltd., Toronto.

Time was, and that not so long ago, when it was not thought necessary for a surgeon to know anything about pathology. This probably accounts for the dearth of really good books dealing with the subject as it more particularly bears on surgical work. That time is now past, and every surgeon who desires to be something more than a superior type of carpenter feels that he should know something of the science of his subject. But where is he to look for this instruction? We think that he cannot do better than look in Boyd's Surgical Pathology. This excellent work which first appeared in 1925 has just reached its second edition. It has to some extent been recast and re-written and has been brought up to date. About 130 illustrations have been added. The most striking changes are in connection with tumours of the central nervous system, which have been re-arranged on the basis of Bailey and Cushing's work, and the malignant tumours of bone, which are considered in the light of new information obtained from the Registry of Bone Sarcoma of the American College of Surgeons. Among other subjects, either dealt with *de novo* or somewhat expanded, are, Cadham's studies on the treatment of septicæmia, pre-cancerous lesions, the reticulo-endothelial system, diverticulosis, Wilkie's work on the etiology of chronic cholecystitis, Counsellor and McIndoe's work on hydrohepatosis, the etiology of rickets, and the recent criticisms of Sampson Handley's views on lymphatic permeation. The chapters on the thyroid, stomach, and the breast seem to us to be particularly valuable and judicial. The bibliography, while not intended to be complete, covers the chief papers that will be found helpful under the various topics. The illustrations are good, and really illustrate, while the coloured plates are beautiful. It is pleasant to note the attention that has been given to Canadian work. Many little hints are scattered through the book which will be of practical utility to the surgeon. Altogether, we regard this as the best book that is extant at the present which deals with this most important branch of pathology.

A. G. NICHOLLS

Thyroxine. Edward C. Kendall, M.S., Ph.D., D.Sc. 265 pages, with charts. Price $5.50. Chemical Catalog Co., New York, 1929.

This volume is one which, as the author states, was to have been published many years ago but for

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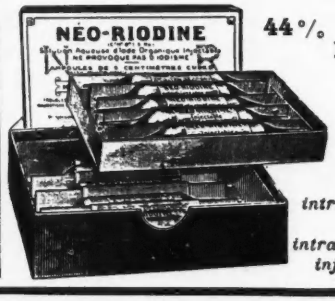

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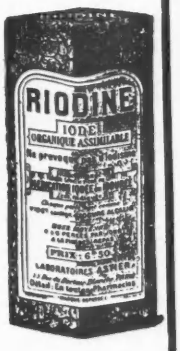

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good reasons has been held until now. It would, as is remarked in the preface, have been out of date now, even if published two years ago. Naturally the book is the result of work done from the point of view of the chemist, but it was the relief of hypothyroidism by the clinician that first attracted chemical investigation, and from then on the chemist has worked with the main idea in view of correlating thyroid activity and oxidation, and this book contains the sum of all the knowledge gained from past work to the discovery of thyroxine by the author.

The first chapter gives a full history of previous work and the most important workers, full credit being given to each. Nurnberg, especially, being shown to have been close to discovery.

Chapter two deals with the first isolation and identification of thyroxine by Kendall, and reviews the various methods used in isolating the compound and the efforts to find its true chemical formula, with the time consuming and expensive work connected with it. Chapter three contains the result of work which cannot but be of absorbing interest to every reader, carrying over from chapter two Harrington's work and Kendall's re-investigation resulting in the finding of varying iodine contents of thyroid glands according to season and geographical situation. Chapters four, five and six continue the chemical history, so to speak, six dealing with the chemical nature of that large percentage of iodine in the thyroid gland which is not in the form of thyroxine. It is in this chapter that the only jarring note in what must be called an outstanding book occurs, when Kendall uses the word "misleading" in relation to Harrington's paper on the isolation of thyroxine. It may not mean what it seems to mean, but Kendall's work is too big for any small oversight in the use of words in criticizing another's paper to be allowed to mar it, and I trust this will not be overlooked in the next edition.

From chapter seven onward the book becomes of more interest to the internist. All clinicians and others interested in the thyroid must make themselves fully familiar with this work. The foundation for future chemical and clinical work, already built on partly, still has room for other chemical structures of great interest and clinical value, as is shown chapter by chapter. And that the workers are not few is shown by the very fine bibliography.

C. S. McKEE

Morphologic Variation and the Rate of Growth of Bacteria. Vol. 1, Arthur T. Henrici, M.D. 194 pages with charts. Price $3.50. Charles C. Thomas, Springfield, Ill., 1929.

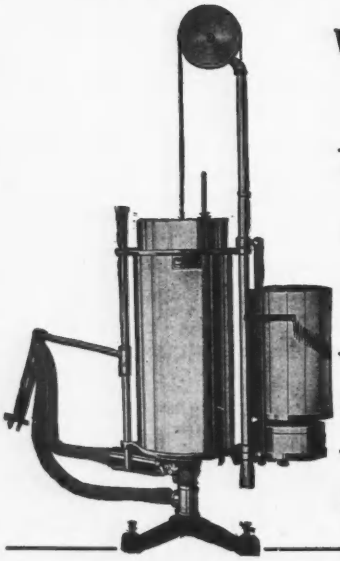
This is the first volume in a series of monographs on microbiology and is a good introduction indeed. Of course a book such as this necessarily will appeal to a limited number of readers, mainly men or women doing purely laboratory bacteriology. It deals with bacteria from the standpoint of the "Pleomorphist" rather than the "Monomorphist" and is, as the author states, a record of personal researches into the subject, presented with the hope of stimulating others to take up similar studies.

The problem which is to be faced is clearly explained in the first chapter, although some of the terms used will be new to all but the initiated. The second and succeeding chapters give the work done and data collected with mathematical expression of the results.

The summing up in the last chapter, followed by an appendix and bibliography, completes a very interesting volume on a line of approach to the solution of a problem which will be of value in a much wider field than bacteriology.

C. S. McKEE

The BENEDICT-ROTH



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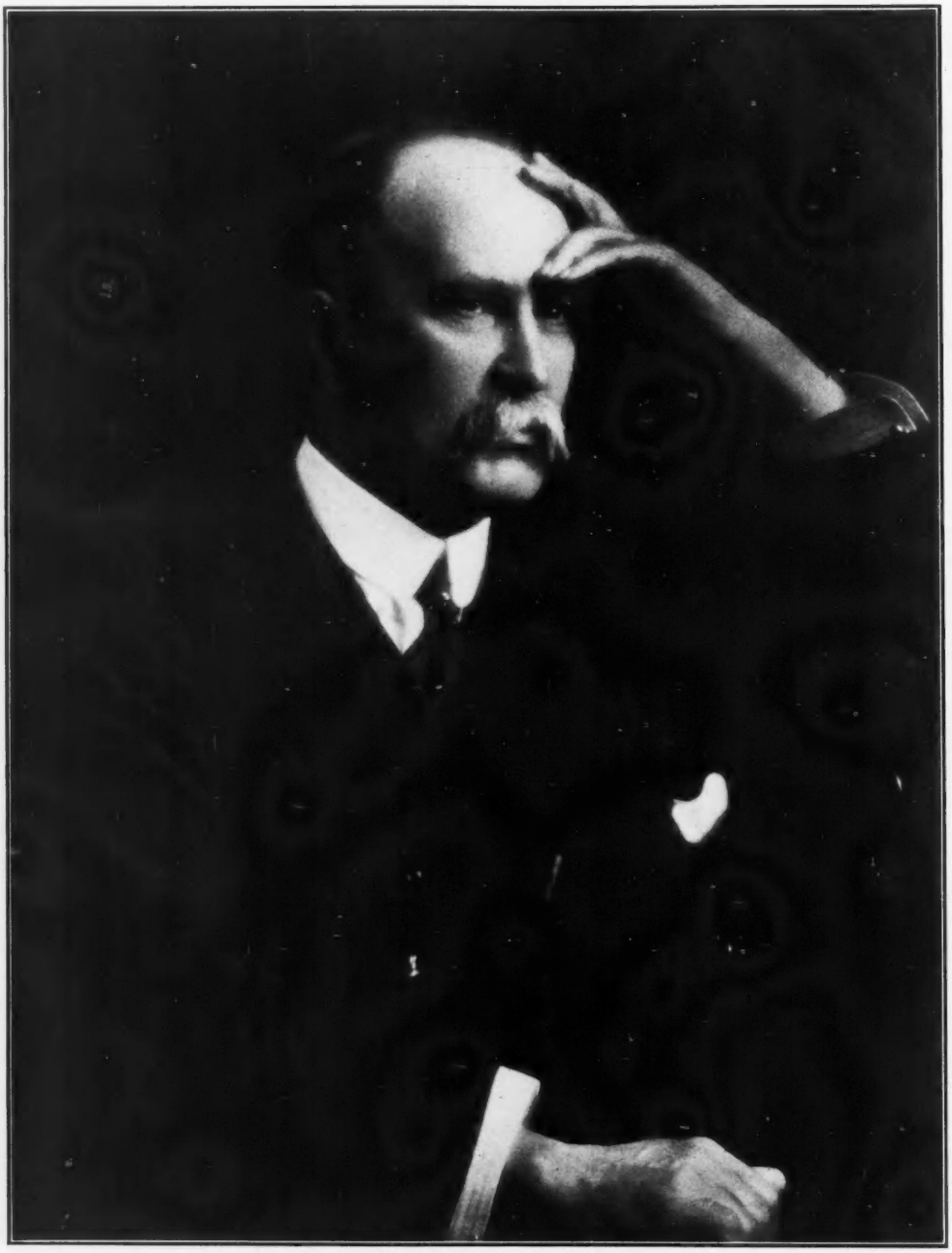
PHYSICIANS WARNED AGAINST COUNTERFEIT DRUGS

Action of the Board of Health in the City of New York uncovers the fact that a bold attempt has been made recently to put on the market spurious imitations of some standard pharmaceuticals. These imitations closely resemble the genuine article. They are packed in similar bottles and cartons, with labels that are counterfeits of the originals, so that it is difficult to detect the fraud. The New York Board of Health analyzed a number of specimens of these articles obtained from various pharmacies. This demonstrated conclusively their fraudulent character and that the desired therapeutic effect could not be obtained by their administration.

Principal among the drugs which have been imitated is Luminal, the spurious tablets of which contained no phenobarbital but an entirely different drug.

The therapeutic effect of Luminal is well known to the physician, and when he encounters a patient who does not respond in the usual way to the action of the drug his suspicions should be aroused. In such instances he should procure an original bottle of the product dispensed and send it to the Winthrop Chemical Company, 117 Hudson Street, New York, for analysis.



SIR WILLIAM OSLER, Bart.